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TEXTILE WORLD

JANUARY · 1944

JAN 20 1944 DETROIT

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We Salute The U. S. Armed Forces

...and the American manufacturers whose skill and enterprise provide them with the finest equipment in the world.

A large reproduction in full color, suitable for framing, of any of the official emblems shown above will be sent to you on request, free of charge. Any serviceman, or member of his family, will be proud to have the emblem of his branch of the service.

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T. HOLT HAYWOOD, WINSTON-SALEM, NORTH CAROLINA

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Looms in 1944

During 1943 we built no textile machinery. The reason—our efforts have been directed towards two ends:—
First, to carry on our vital war emergency jobs—machine tools, guns and airplane equipment;
Second, to furnish promptly repair parts and supplies to enable your looms to make good on their wartime jobs.

We have met and are meeting required schedules on the war jobs; you know how exceedingly well we have served you on repairs.

Now some of our emergency war jobs are completed, and our 1944 program calls for a resumption of loom building—only a trickle of orders at first, under ratings authorized by the War Production Board.

We trust, as the year progresses, the situation on our many battlefronts will become so favorable and ultimate victory so sure and so near at hand, that our trickle of loom orders may become a stream and your mill may again be busy weaving the fabrics of peace.

But while the war lasts, loom-building must be regulated by the needs of our military forces.

May 1944 bring peace to a tortured world and opportunity for all people to enjoy the arts of peace.

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WANTED: *new fields to conquer*

SODIUM CHLORITE: A product of Mathieson Research!

A powerfully efficient oxidizing agent – easily controlled – that operates effectively over a wide range of conditions from highly acid to highly alkaline.

Sodium Chlorite does the job you want done – and only that!

In years an infant, in accomplishments a prodigy – Mathieson Sodium Chlorite has made vital contributions in manufacture and processing:

- oxidization of vat dyes in textile field.
- bleaching of cotton without danger of degradation.
- bleaching cellulose acetate – no saponification hazard.
- simultaneous scouring and bleaching of cotton-rayon mixtures.
- bleaching paper pulp to exceptional, high brightness with superior quality.
- refining and bleaching sugar and sugar melts at lower costs with increased recoveries.
- speeding the bleaching of waxes.

And now, Mathieson Sodium Chlorite wants new fields to conquer. For we compound the stimulus but you must fire the mold. So here it is – complete information is yours for the asking.

Mathieson Sodium Chlorite

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TEXTILE WORLD

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Early Southern Industry

Comments by Lord and Nagle

H. G. Lord speaking:

The other day I was talking with my long-time partner, Frank Nagle, about the wonderful change in the industry since we started in this business in the eighties.

Of course, the great expansion in the Southern States came up for discussion and how our own staff operations had necessarily been adjusted to meet the shifting of balance from the early concentration in New England and Pennsylvania to a nation-wide distribution of textile manufacturing enterprise. He was speaking about the first cotton manufacturers convention in the South and I asked him to tell that story. He said, "My job is writing contracts, not articles." But anyone who has heard him tell stories knows that he can do both.

Captain Nagle speaking:—

My brother James W. Nagle founded the *Textile Record*. He was much interested in the articles by the late Edward Atkinson widely known Boston economist and originator of the factory mutual insurance plan. Mr. Atkinson constantly emphasized the advantages of the South as a field for cotton manufacturing. The first four issues of *Textile Record* (September through December, 1880), now in the *Textile World* archives, sponsored Mr. Atkinson's idea, leading to conferences in the South between Mr. Atkinson, my brother, and influential cotton people which culminated in the establishment of the first Cotton States and International Exposition in Atlanta, Ga.

As a young man, the subject was so drilled into me that I always had a great desire to visit the South. In 1892 I was sent from Philadelphia to establish a branch office in Boston, and this gave me an opportunity to come into frequent contact with the then New England Association of Cotton Manufacturers and with Mr. Atkinson. This was before the *Textile World-Record* was organized through the union of the *Textile World* (founded by Henry G. Lord) and the *Textile Record*, and which later became the *Textile World*.

When the Association decided to meet in Atlanta and attend the Exposition, I immediately put my name down as a guest with permission to accompany the members. This was my first visit to the South. It has always been a satisfaction to me that the *Textile Record* and *Textile World* had a big hand in helping to start cotton manufacturing in the South.

The 39th meeting of the New England Cotton Manufacturers' Association was held on Oct. 24-25, 1895, on the grounds of the Cotton Exposition in Atlanta, attended by about 200 members, ladies, and guests. Most of the eastern New England contingent left Boston from the old Park Square depot of the New Haven Railroad, now the site of the Boston office of Textile World.

Among those on the trip whom I particularly recall were James Butterworth, Philadelphia; Frank B. Comins, American Moistening Co., Providence; Eben S. Draper, later Governor of Massachusetts, and George Otis Draper, the Draper Co., Hopedale; William Firth, agent for John Hetherington of England; Stephen Knight, Providence; Arthur H. Lowe, Fitchburg; J. R. McCall, Lorraine Mfg. Co., Pawtucket; Haven C. Perham, Kitson Machine Co., Lowell; Thos. H. Rennie, expert on Southern cotton manufacturing; Paul Snelling and Frank J. Hale, Pettee Machine Wks., Newton (Mr. Hale is still connected with the Saco-Lowell Shops, Boston); J. M. Lassell, Whitin Machine Wks., Whitinsville; Geo. W. Stafford, Stafford Loom Co., Boston; Sidney B. Paine, General Electric Co.; D. A. Tompkins, who joined us at his home city of Charlotte, N. C.; L. E. Barnes, Methuen Mills, Lawrence; Eugene Burnham, Burnham & Page Mill Supplies Co., Lawrence; Col. Peter H. Corr, Taunton; George P. Grant, Grant Yarn Mills, Fitchburg; and Edwin W. Thomas, Lowell.

At Charlotte we spent a half day visiting textile plants and were luncheon guests of the Manufacturers Club, H. S. Chadwick, its president, doing the honors. If there was anything which was not served on this occasion, it was something that the South knew nothing about!

Our Atlanta stay was packed full with interest and friendliness. The Exposition contained the latest developments in machinery and processing, later being occupied by the Exposition Cotton Mills. Charles A. Collier was president and director general of the Exposition, John W. Ryckman, my brother's partner, being its secretary. H. I. Kimball, whom I met, was general manager, and later the Kimball House was built and named in his honor. A. M. Goodale was president and C. J. H. Woodbury secretary of the New England Association.

A number of useful papers were read and discussed at the convention, including a very significant one by George Otis Draper on "The Present Development of the Northrop Loom," then a new product of much concern to the industry.

Northern textile machinery makers utilized this convention as a widening road to an expanding Southern market, and many lasting friendships were created. We were lavishly entertained in true Southern style. One incident which lingers in memory is how a large party of us missed a burlesque show by a few minutes, but one of our resourceful members was delegated to approach the management for a special repeat performance. This was granted on condition that we would all make our way into the auditorium by the stage entrance in order not to tip off the departing patrons as to what was afoot. The show was followed by a sandwich and coffee round-up —at least these were the basic viands—in which performers and textile audience jogged elbows together in the spirit of Auld Lang Syne.

Nearly half a century has passed, but the good feeling engendered among those who journeyed to Atlanta and their hosts, no matter from what point of the compass, helped to establish and maintain both friendly and profitable relations through the vicissitudes of the years which followed.

HENRY G. LORD and FRANK L. NAGLE
Founders of Textile World and Textile Record

Stuffed Shirts

SHIRTS not by the box . . . by the *bale*. And not only shirts but sox, underwear, blankets, etc. get compressed into bales that reduce their bulk ⅔rds to save vital cargo space.

In producing these textiles, mills are reducing down time for repairs and replacements, by lubricating with Texaco.

Texaco Stazon, for example, assures efficient lubrication with minimum spoilage of yarn or fabric due to oil stain. It stays on fast-moving cranks, etc., withstanding load shocks without splattering, creeping, dripping. Its high stability assures free operating bearings with lower power consumption.

For loom cams, use *Texaco No. 919 Lubricant S.*

Texaco Lubrication Engineering Service is available to you through more than 2300 Texaco distributing points in the 48 States. Call today. The Texas Company, 135 East 42nd Street, New York 17, N. Y.

THEY PREFER TEXACO

★ *More buses, more bus lines and more bus-miles are lubricated with Texaco than with any other brand.*

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TEXACO Lubricants

FOR THE TEXTILE INDUSTRY

TUNE IN FRED ALLEN EVERY SUNDAY NIGHT—CBS ★ HELP WIN THE WAR BY RETURNING EMPTY DRUMS PROMPTLY

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and Industry working to
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THE RIGHT COMBINATION

INSTALLATION OF MODEL "E" WOOL SPINNING FRAMES AND WHITIN-SCHWEITER WINDERS AT ST. MARY'S WOOLEN MFG. COMPANY, ST. MARY'S, OHIO.

. . . is no longer a secret

For a long time, mill men have been trying to find a way of combining the many known advantages of large package wool spinning with an economical rewinding process that would produce perfect loom bobbins.

And now it's here — at your service!

We have teamed Whitin's Model "E" Wool Spinning Frame, a headliner in its own right, with the improved Whitin-Schweiter Automatic Filling Bobbin Winder, another top-notch unit, to give you the combination you have been waiting for to produce high quality, economical filling.

St. Mary's Woolen Mfg. Company of Ohio, makers of the famous St. Mary's Blankets, were among the first of many progressive mills to realize the merits of this unusual combination.

Remember — Each unit is a proven product — Every combination is doubly effective.

ELEVEN FILLING BOBBINS REWOUND DIRECTLY FROM EACH TWENTY OUNCE FRAME BOBBIN.

Let's take a look at the FEATURES

Model "E" Wool Spinning Frames

1. Less floor space
2. Higher Productions
3. Simplified Operation
4. Larger Packages for Rewinding
5. Improved Quality of Yarn

Whitin-Schweiter Winders

1. Individual Spindle Control
2. Automatic Doffing of Loom Bobbins
3. Continuous Winding from Magazined Creel Bobbins
4. Simple, Adjustable Bunch Builder
5. Wind any Size Loom Bobbin

WHITIN MACHINE WORKS

WHITINSVILLE, MASSACHUSETTS, U. S. A.

CHARLOTTE, N. C. ATLANTA, GA.

As Potent As Big Guns

Ball Bearings by New Departure have developed into star performers on every front—and behind the lines as well. Wherever a shaft turns—wherever motion must be friction-free — there "nothing rolls like a ball" in this highly mechanized war . . . . And in recognition of the "yeoman service" these fine ball bearings are rendering — they again will be first choice for peacetime products.

New Departure Division of General Motors, Bristol, Conn.

New Departure

NOTHING ROLLS LIKE A BALL

"TAKE A STITCH IN TIME . . ."

USE *Ashworth* CARD SURVEYS

★ Don't wait until your cards break down, or until worn out or damaged wire in your cylinders, flats or lickerins causes poor work. Such delay results in unnecessary waste and loss of production. "Take a stitch in time"; have an Ashworth engineer inspect your cards regularly. Using Ashworth surveys, you can budget your card repair work and schedule it so that it will minimize interference with production.

★ And as always Ashworth means card clothing satisfaction, for its 3 factories, 6 repair shops and 7 distributing points assure an uninterrupted supply, prompt repairs and ready availability.

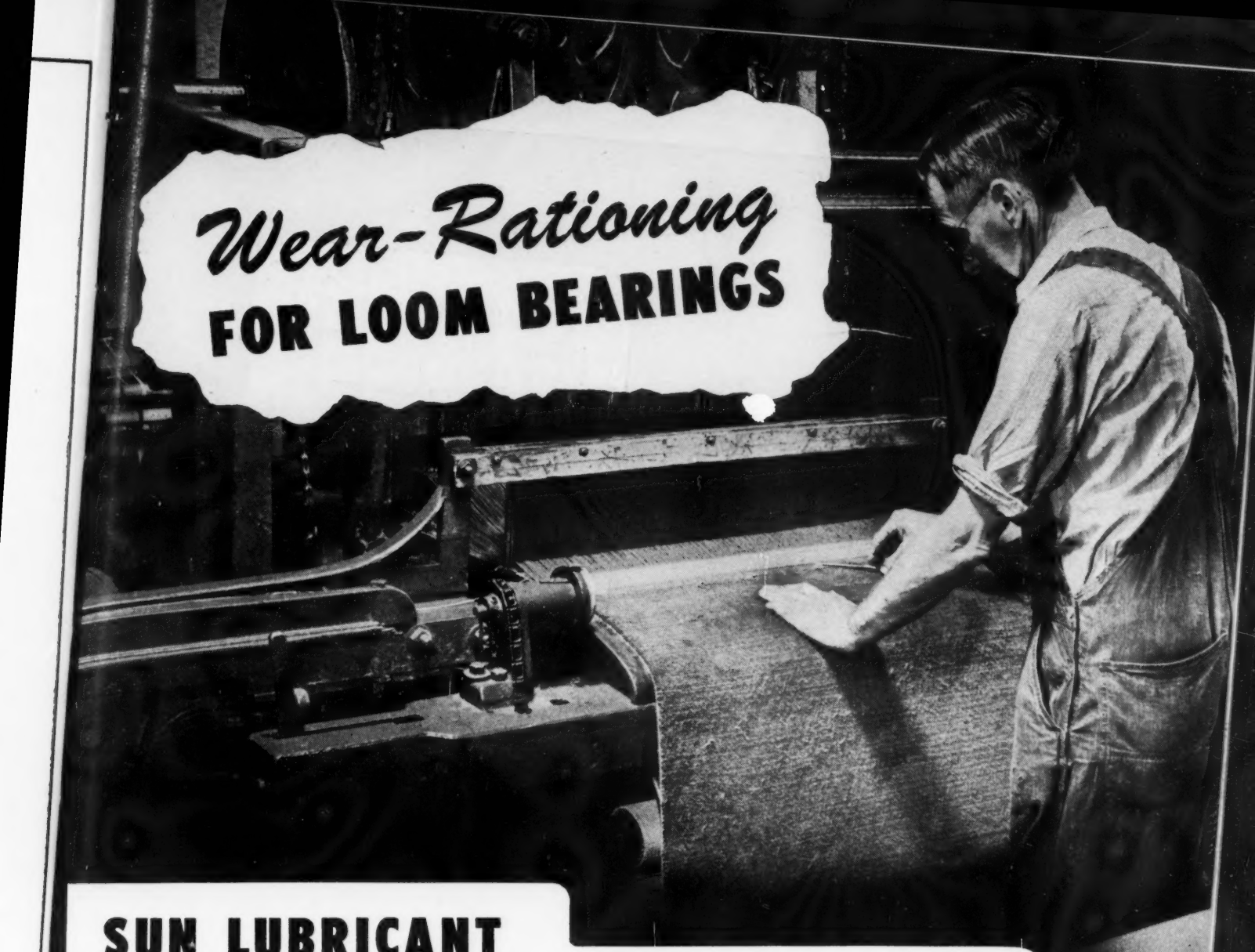
ASHWORTH BROS., INC., Woolen Div., AMERICAN CARD CLOTHING CO.

FALL RIVER *†‡ WORCESTER *‡ PHILADELPHIA *†‡ CHARLOTTE †‡ GREENVILLE †‡
ATLANTA †‡ DALLAS †‡ (Textile Supply Co.)

** Factory • †Repair Shop • ‡Distributing Point*

PRODUCTS AND SERVICES: Card Clothing for Cotton, Wool, Worsted, Silk and Asbestos Cards and for all Types of Napping Machinery • Brusher Clothing and Card Clothing for Special Purposes • Lickerin Wire and Garnet Wire • Sole Distributors for Platt's Metallic Wire • Lickerins and Top Flats Reclothed.

ASHWORTH CARD CLOTHING



Wear-Rationing FOR LOOM BEARINGS

SUN LUBRICANT

reduced bearing maintenance . . . saved time . . . cut costs 10%

Equipment today is straining to surpass former production. At the same time, because it is generally not replaceable, wear and tear must be reduced to a minimum, to insure longer life.

Inadequate bearing lubrication on a rug loom was one of the problems confronting a large eastern textile mill. They were getting only fair results with their regular lubricant, until a Sun Textile Engineer recommended a special Sun Lubricant as the answer to their requirements.

Their problem was solved when the change was made. Bearings are adequately lubricated, at all times . . . the oil does not drip off on the floor . . . is more tacky and stays on the bearings longer.

Now maintenance and wear are reduced . . . production is speeded and, because the oil lasts longer, a saving of 10% has been effected on lubricant costs!

Whether your problem is one of lubrication or processing, let a Sun Oil Textile Engineer help you conserve your equipment and improve production. Call or write . . .

SUN OIL COMPANY · ***Philadelphia 3, Pa.***

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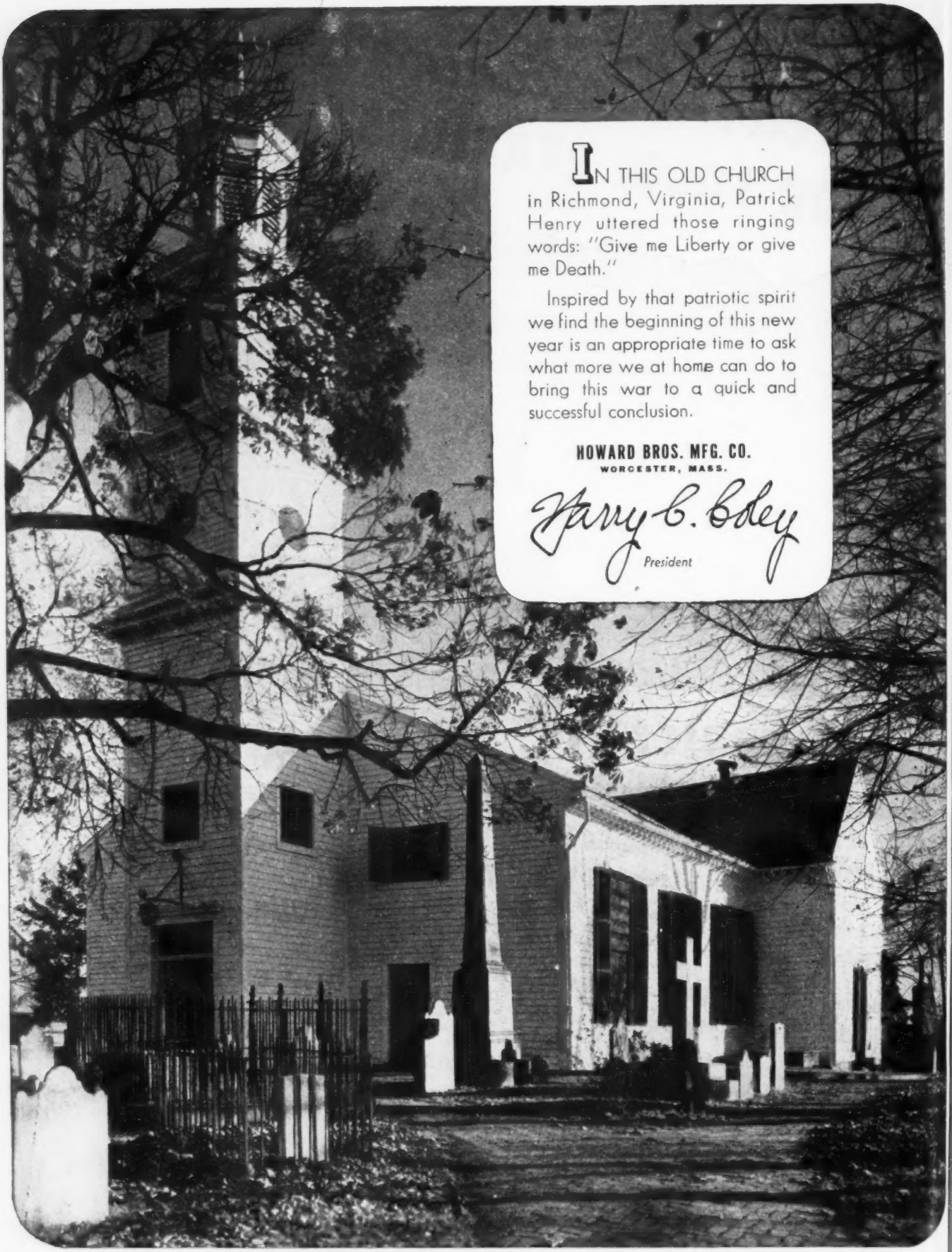
SUN INDUSTRIAL PRODUCTS HELPING INDUSTRY HELP AMERICA



IN THIS OLD CHURCH in Richmond, Virginia, Patrick Henry uttered those ringing words: "Give me Liberty or give me Death."

Inspired by that patriotic spirit we find the beginning of this new year is an appropriate time to ask what more we at home can do to bring this war to a quick and successful conclusion.

HOWARD BROS. MFG. CO.
WORCESTER, MASS.

Harry C. Bodey
President

PRODUCTS

Card Clothing for Woolen, Worsted, Cotton, Asbestos, and Silk Cards–Napper Clothing, Brush Clothing, Strickles, Emery Fillets. Top Flats Recovered and extra sets loaned at all plants–Lickerins and Garnett Cylinders from 4 to 30 inches and Metallic Card Breasts Re-wired at Southern Plant—Midgley Patented Hand Stripping Cards, Howard's Special Hand Stripping Cards and Inserted-Eye and Regular Wire Heddles.

AFTER V-DAY You'll need ALOYCO STAINLESS STEEL VALVES

ALTHOUGH no one can predict whether business will be good or otherwise after the war, one thing is certain – it will be highly competitive. In the food, chemical, petroleum and other process industries, therefore, all equipment – especially pipe lines – should be modernized and put in perfect condition as soon as critical materials are again available. For it is only with first-class equipment that manufacturers in the process industries can hope to keep their costs low enough to enable them to retain their place in the competitive struggle. It will pay you to look over your pipe lines now and make your plans to get the stainless steel valves and fittings you will need.

Aloyco Stainless Steel Valves and Fittings are available now for new installations on high priorities and for maintenance and repairs under M.R.O. regulations.

ALOYCO

Stainless Steel VALVES and FITTINGS

GATE VALVES • GLOBE VALVES
Y VALVES • CHECK VALVES
LEVER THROTTLE GATE VALVES
TANK VALVES • SCREWED FITTINGS
FLANGED FITTINGS
GAUGE GLASS FITTINGS

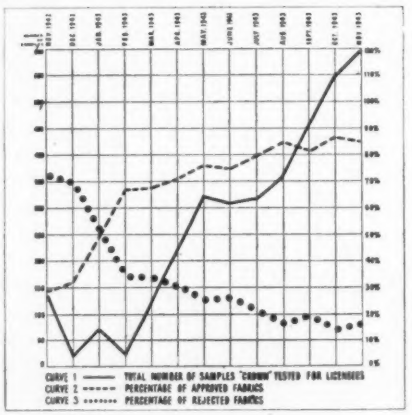
Alloy Steel Products Company, Inc., 1304 West Elizabeth Avenue, Linden, N. J.

RAYON REPORTS

Published Monthly by American Viscose Corporation, New York, N. Y. JANUARY, 1944

PROGRESS OF CROWN TESTED PLAN A TRIBUTE TO CONVERTERS AND FINISHERS

The chart pictured here reveals the progress made by the new CROWN Tested Plan of the American Viscose Corporation since it was introduced little over a year ago.


CURVE 1 —— TOTAL NUMBER OF SAMPLES "CROWN" TESTED FOR LICENSEES
CURVE 2 ----- PERCENTAGE OF APPROVED FABRICS
CURVE 3 ..... PERCENTAGE OF REJECTED FABRICS

As Curve 1 shows, the first month the plan went into effect only 134 dye lots were tested against requirements. But a year later—November, 1943—this figure stepped up to 596 dye lots tested for CROWN Tested licensees. Curve 1, then, shows the acceptance for this plan by converters and finishers.

Curve 2 of the chart shows the percentage of dye lots approved under the plan. The steady rise of the curve is evidence that CROWN Tested requirements are being met in better than 80% of the fabrics tested. Curve 2, along with Curve 3, which shows the steady decrease in dye lot rejections, are proof of the splendid manner in which licensees are cooperating to insure consumer satisfaction. These converters and finishers, along with the plan they have accepted, are working for the continuous improvement of rayon fabrics for the American public.

ROANOKE PLANT'S NEW SAFETY RECORD WINS AWARD FOR THIRD CONSECUTIVE YEAR

By working 4,471,000 man-hours without a lost-time accident, the Roanoke, Va. Plant of the American Viscose Corporation set a new company record and won the Corporation's All-Plant Safety Trophy for the third year straight.

In achieving this record, Roanoke's average was only one major injury resulting from accident for every million man hours worked. This average, incidentally, betters that of any leading U. S. industry.

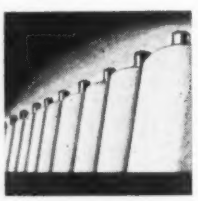
ONE CHEMICAL PRODUCT HELPS ANOTHER

On every war front, rayon cord has proved its worth in tires made from natural rubber. Many will be surprised to know that this rayon cord is even more essential for synthetic rubber tires.

Synthetic rubber generates heat faster and dissipates it more slowly than natural rubber. And rayon yarn has the property of heat resistance to a surprising degree. Moreover, because rayon tire cords retain more of their strength at the high running temperature of these tires, they increase their strength and life.

To get a more complete picture of the role that rayon is playing and will continue to play in relation to synthetic rubber tires, look for the American Viscose advertisement which is scheduled for the Jan. 17 issue of Time. If you care for a reprint of this advertisement simply write to American Viscose Corporation, 350 Fifth Ave., New York City.

U. S. RAYON PRODUCTION TO SET NEW RECORD



1943 has been a banner year for U. S. rayon producers—658,000,000 pounds being the total output, according to preliminary figures from Rayon Organon. This increase over previous years—633,000,000 pounds in '42 and 573,000,000 pounds in '41—is due chiefly to expanded production at Government request of extra-strength rayon yarns for use in military tires, self-sealing gasoline tanks, fragmentation bomb and supply 'chutes as well as to slightly enlarged output of rayon staple fiber urgently needed for civilian clothing requirements.

WINDFALL FOR CONSUMERS AND RETAILERS

A series of leaflets giving basic information about rayon and the care of rayon garments is being distributed by the American Viscose Corporation to consumers and retailers. They are designed to help consumers to get longer wear from their clothing and aid retailers in the instruction of salespeople and in the preparation of advertising dealing with conservation and the care of clothing.

Subjects covered by the leaflets include such varied topics as "How to Care for Rayon Fabrics," "Simple Rules for the Care of Spun Rayon and Wool Blended Fabrics," "Guide to Color Fastness in Today's Fabrics," "Tips on Sewing with Rayon," "How to Recognize Fabric Constructions," "The Selection and Care of Rayon Hosiery," "The Up to Date Story of Rayon," "Glossary of Rayon Fabrics," "How to Buy Rayon Fabrics" and "This is the Way to Wash Your Rayons."

To date, more than 2,500,000 of these informative leaflets have been distributed, largely in response to requests. If you have not received your series, or if you would like additional copies, simply write to American Viscose Corporation, 350 Fifth Avenue, New York City.

MAKE USE OF 4-PLY SERVICE

1 PRODUCT RESEARCH
Helps you get the right yarn.

2 FABRIC DEVELOPMENT
Helps you design new fabrics.

3 TEXTILE RESEARCH
Helps solve production and finishing problems.

4 "CROWN"* TESTED
Helps provide scientific selling facts.

AMERICAN VISCOSE CORPORATION

Producer of
CROWN* *Rayon Yarns and Staple Fibers*

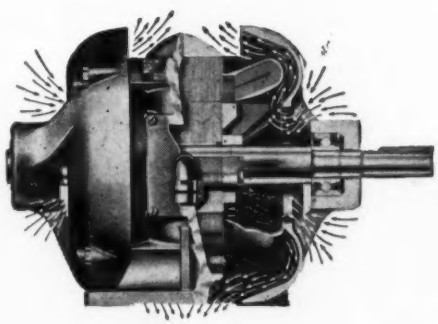
Sales Offices: 350 Fifth Avenue, N. Y. C. 1; Providence, R. I.; Charlotte, N. C.; Philadelphia, Pa.
Plants at: Marcus Hook, Pa.; Roanoke, Va.; Lewistown, Pa.; Nitro, W. Va.; Parkersburg, W. Va.; Meadville, Pa.; Front Royal, Va.

*Reg. U. S. Pat. Off. Copr. 1944, American Viscose Corp.

Here's the motor that maintenance men have aptly called the "profit-maker". Westinghouse engineers have taken advantage of every possible construction detail to give you ***THE MOTOR THAT LINT CAN'T STOP.***

Lint goes in—through—and out the wide, smooth air passages of these patented Westinghouse Lint-Free Motors. Air flows freely around the glossy, streamlined windings—and with it goes all lint particles that might otherwise clog the motor. It's almost frameless, so far as obstruction to ventilation is concerned—yet it has the same sturdiness as Westinghouse general purpose motors. The unique design insures clean, cool, continuous operation. For more production, with less maintenance—plan now to standardize on Westinghouse Lint-Free motors for your individual drives on pickers, roving frames, winders and spinning and twisting frames. Ask your nearest Westinghouse representative, or write for Descriptive Bulletin 3880-2. Westinghouse Electric & Manufacturing Company, Department 7-N, East Pittsburgh, Pa.

J 94608



LINT GOES IN—THROUGH—AND OUT

Note how the flow of air is directed around the stator windings—absolutely no spot for lint to cling. Bearings are factory-lubricated and sealed—no lubrication necessary during the first three years of service. The same seal that keeps the grease in keeps the lint out. It's the cleanest running motor in the textile industry. The simple construction and fewer parts means less maintenance, too!

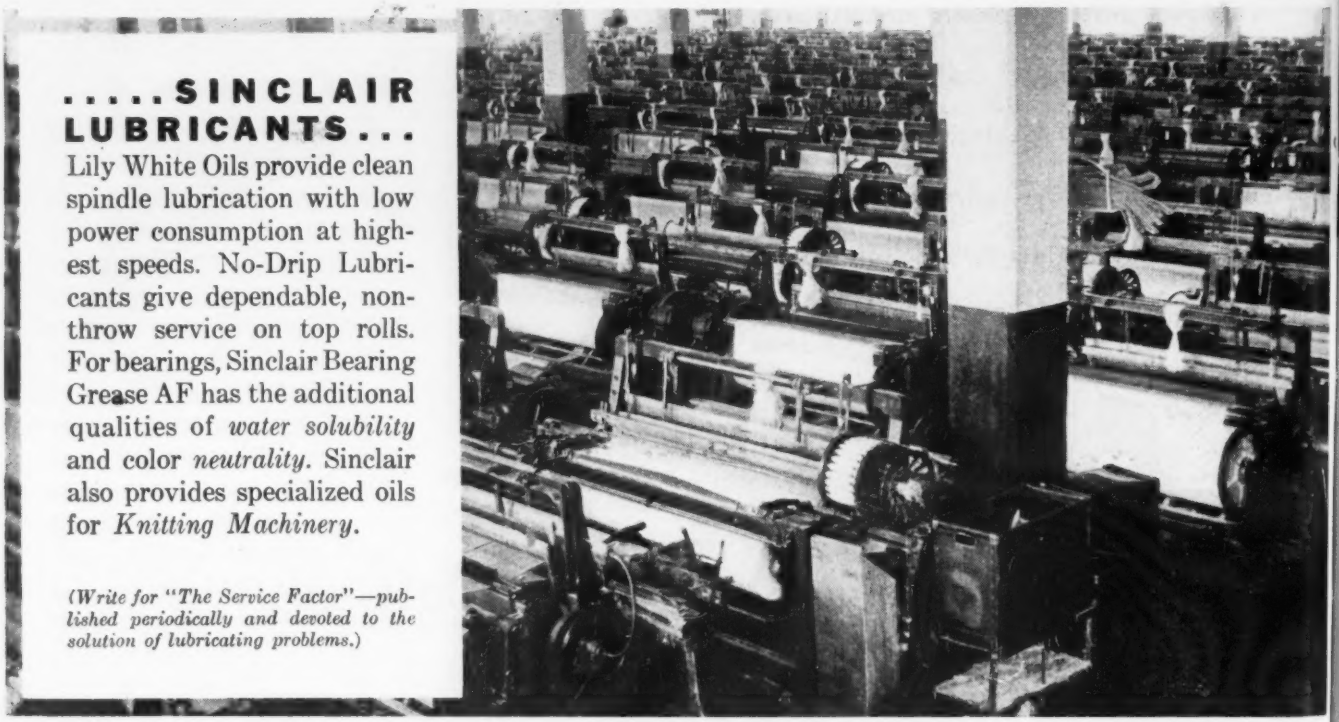
Westinghouse

PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

LINT-FREE MOTORS

POWER TO ATTACK
relies on power to *produce.* For stepped-up production from *TEXTILE* equipment use . . .

Official U. S. Army Signal Corps Photograph



. . . . . SINCLAIR LUBRICANTS . . .
Lily White Oils provide clean spindle lubrication with low power consumption at highest speeds. No-Drip Lubricants give dependable, non-throw service on top rolls. For bearings, Sinclair Bearing Grease AF has the additional qualities of *water solubility* and color *neutrality.* Sinclair also provides specialized oils for *Knitting Machinery.*

(Write for "The Service Factor"—published periodically and devoted to the solution of lubricating problems.)

SINCLAIR TEXTILE LUBRICANTS

FOR FULL INFORMATION OR LUBRICATION COUNSEL WRITE SINCLAIR REFINING COMPANY (INC.), 630 FIFTH AVENUE, NEW YORK 20, N. Y.

SANDOZ PRESENTS *the color achievement of the month*

Exultant Red BY PACIFIC MILLS

These are times when Fashion must find new excitement in colors . . . for fabrics and accessories are limited.

Sandoz, a leader in dyes, congratulates Pacific Mills, a leader in worsteds and woolens, for its stunning red used in the brilliant officer's coat by Handmacher.

Thus, a fashion leader brings new interest to Mrs. America's wardrobe . . . and Sandoz, though busy supplying Chrome Dyes for war uses, shares in the achievement. For Sandoz Dyes aid Pacific Mills in producing colors of distinction — true and uniform.

Illustrative of Sandoz' developments directed toward more salesworthy and profitable dyeing, are the Metomega Chrome Colors — a full range — which reduce boiling time by as much as 50%. Furthermore, being easier to apply, they speed up the development of correct shading. Formulas can be checked after only 15 minutes.

To assist you in making full use of Sandoz' acid and chrome dyes for the woolen trade — also other lines for cotton and rayon dyeing — we maintain application laboratories in New York, Boston, Philadelphia, Charlotte, Los Angeles and Toronto. Stocks are carried in all these cities.

Branches in Chicago, Paterson and Providence.

Watch for another Sandoz "Color Achievement of the Month" — saluting another Sandoz customer among the leaders of the Textile industry. It will appear next month.

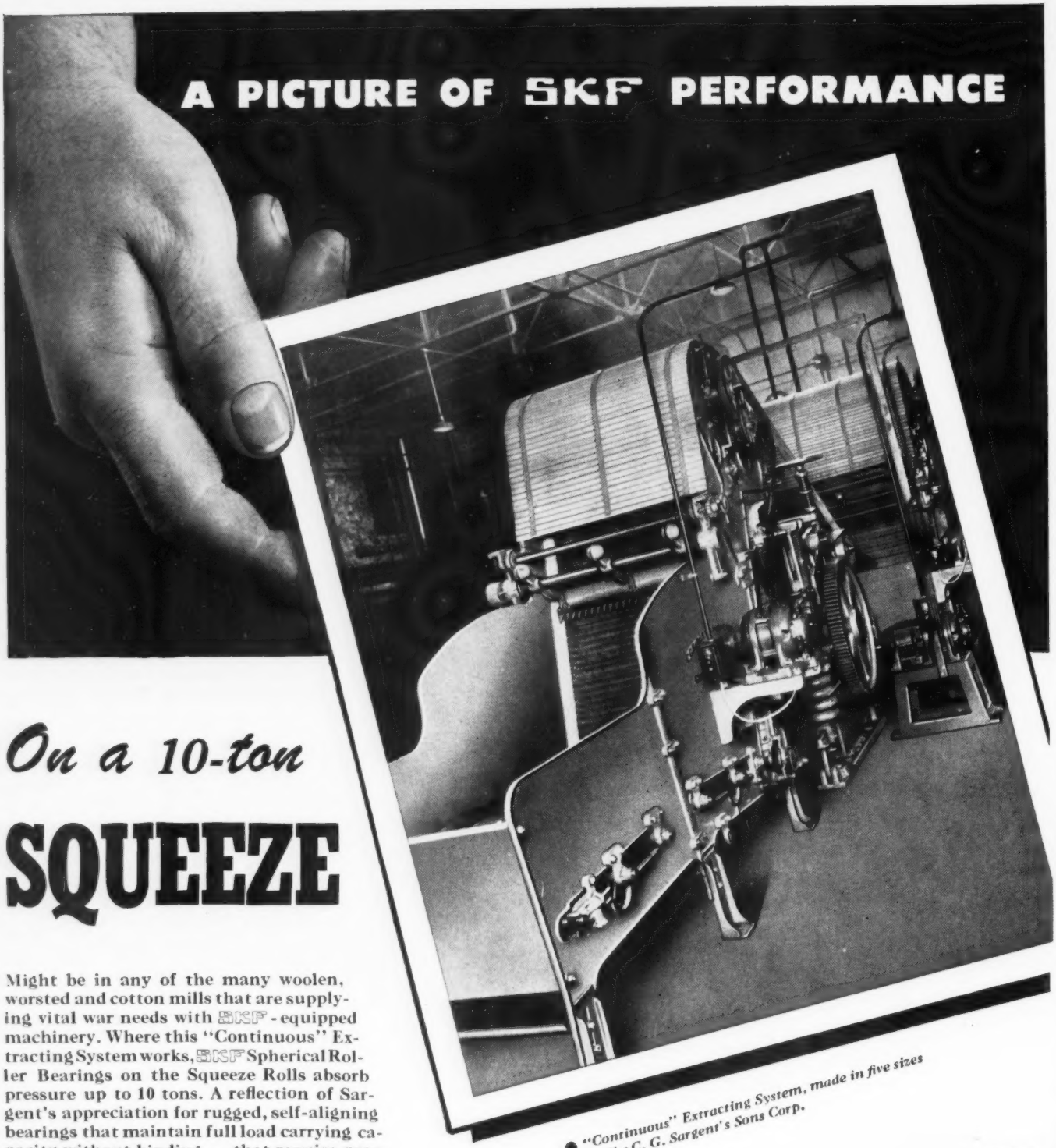
SANDOZ CHEMICAL WORKS, INC., 61 VAN DAM STREET, NEW YORK 13, N. Y.

DETROIT PUBLIC LIBRARY

SANDOZ *thinks ahead with textiles*

SANDOZ

A PICTURE OF SKF PERFORMANCE



On a 10-ton

SQUEEZE

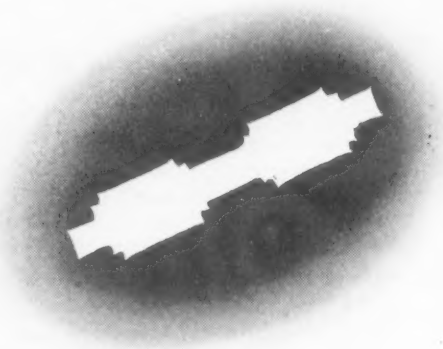
Might be in any of the many woolen, worsted and cotton mills that are supplying vital war needs with SKF-equipped machinery. Where this "Continuous" Extracting System works, SKF Spherical Roller Bearings on the Squeeze Rolls absorb pressure up to 10 tons. A reflection of Sargent's appreciation for rugged, self-aligning bearings that maintain full load carrying capacity without binding . . . that require practically no attention and at the same time are easily removable when roll repairs are necessary. An SKF on the job is *your* warranty of a machine on the job. 5451

● *"Continuous" Extracting System, made in five sizes by The C. G. Sargent's Sons Corp.*

SKF INDUSTRIES, INC., PHILA. 34, PA.

To confirm the Rumors

ABOUT A REMARKABLE NEW COT



IN the textile industry today, there are a lot of rumors that Armstrong has developed a remarkable new roll covering. We're publishing this statement to tell you the facts.

The rumors say it's a cot made of cork combined with synthetic rubber. That's true. We've been making cork cots for twenty-eight years . . . and Accotex (synthetic rubber) Cots for nine years. We've found that cork drafts better, while synthetic rubber promises a longer service life. So it was only natural that we should develop a cot offering *both* advantages.

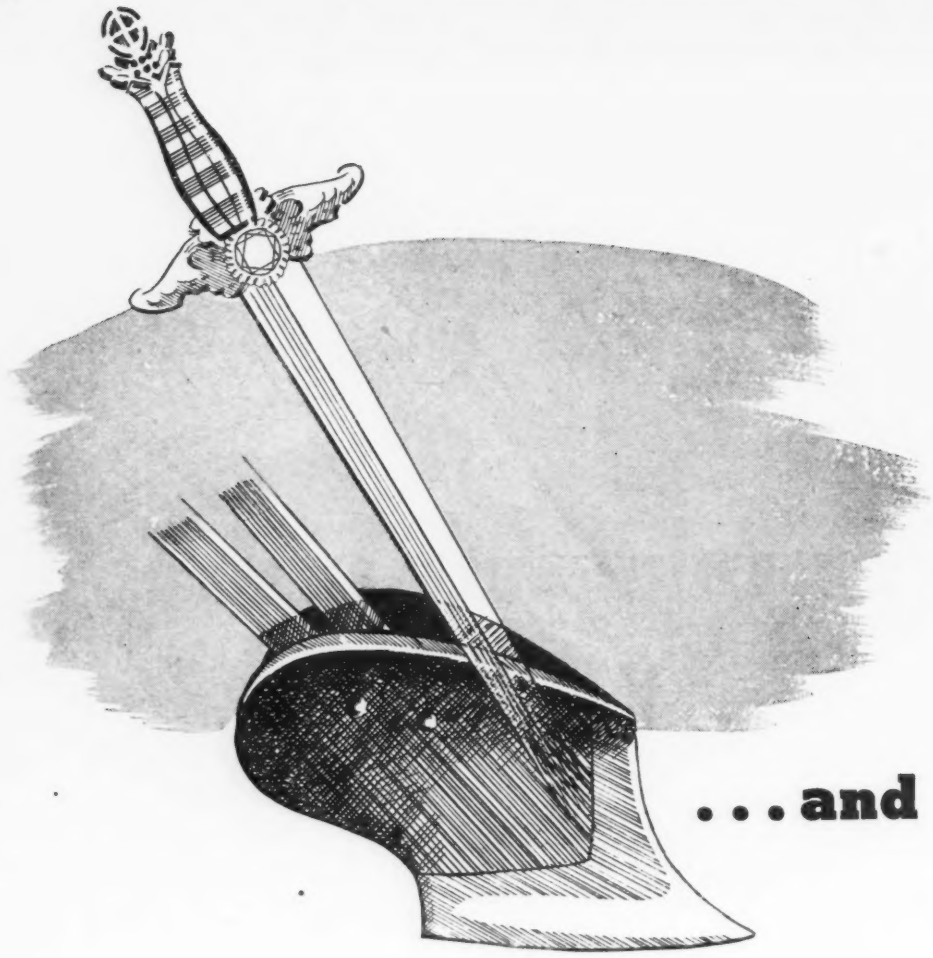
The rumors say, further, that some mills are already using our new cot on a limited production basis . . . and that these mills report it has spinning properties far superior to those of any synthetic roll covering now in general use. That's true also.

If these were normal times, or if we were willing to use one of the less restricted kinds of synthetic rubber, right now we'd be producing cork-and-synthetic-rubber cots by the millions. But there is only one kind of synthetic rubber that does the job right—and, today, most of it is needed in vital war equipment. Hence our current production of the new cots is limited. For this reason, you may not be able to get prompt delivery of as many of them as you would like to have.

Just as soon as these cots become available in unlimited quantities, we will let you know.

ARMSTRONG CORK COMPANY

TEXTILE PRODUCTS SECTION LANCASTER, PENNSYLVANIA



. . . and then what?

When the glorious day dawns—when peace returns to earth and swords are beaten into the proverbial ploughshares—what then, for you and for us?

Right now, we of Industrial Rayon are keeping our minds 100% on the immediate job of production for Victory. But our eyes are turning toward the future. A Company that gave the world the amazing "Continuous Process" of rayon production, would logically be looking ahead to new developments on the textile front. Just what direction the textile future will take is of course a question for a clairvoyant. We are not one of those.

But we do know that the peacetime possibilities of our "Continuous Process" Yarn have hardly been touched as yet. As a matter of fact, the exacting demands for war needs have added immeasurably to our knowledge of its qualities and potentialities.

If you, too, are looking to the textile future, keep your eye on Industrial's "Continuous Process" Rayon Yarn. So superior a yarn will play an important part in the world of the future—perhaps in *your* future.

Industrial
RAYON CORPORATION
MAKERS OF
"CONTINUOUS PROCESS" RAYON YARN
AND "Spun-lo" KNIT UNDERWEAR CLOTH

*Reg. U. S. Pat. Off.

CLEVELAND, OHIO • *New York Office, 500 Fifth Avenue*

MANHATTAN
CONDOR V-BELTS
Whipcord construction gives flexibility, strength and extreme lack of stretch.
OMOCORD
Homogeneous and cushioned Strength Members provide free flexing of Conveyor Belts over pulleys and easy troughing on idlers.
STRENGTH MEMBERS

. . . are the *SINEWS* of FLEXLASTIC* Rubber Muscles

Just as the sinews hold together and strengthen the muscles without limiting their freedom of movement, so MANHATTAN STRENGTH MEMBERS reinforce and strengthen the FLEXLASTICS*, at the same time that they enhance their flexibility and durability.

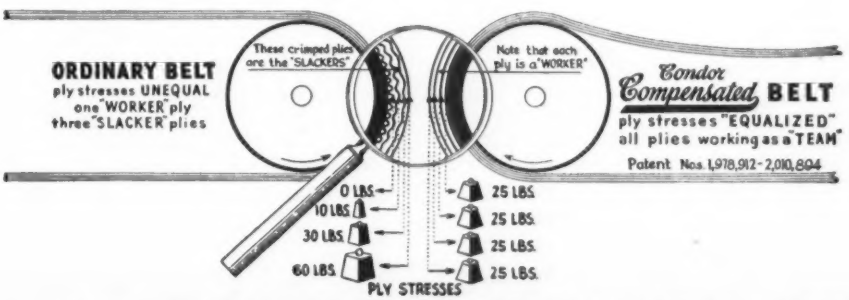
MANHATTAN STRENGTH MEMBERS are "engineered," each one for a specific service, fabricated and scientifically located in the precise area or section where they contribute the most to structural life and capacity—just as in engineering design of bridges or trusses. Members of suitable materials, correctly proportioned and treated, are properly placed with respect to all other component parts.

Examination of the diagram below of ordinary and Condor Compensated Belt illustrates clearly what correctly designed strength members accomplish in performance, longer life and notably lower ultimate cost of power transmission. It is an economy which extends beyond the belt itself, to bearing and machine and to uninterrupted production.

Similar advantages result from a long line of exclusive MANHATTAN developments, such as the Homocord principle for Conveyor Belts; Condor Whipcord Endless Belts with Extensible Tips; Condor Whipcord V-Belts; Homoflex Hose in air, water, spray and other types; MANHATTAN Fire Hose with Radio-Active Mildew-Proof Treated Jackets, and many others.

Condor PRODUCTS

- veyor and levator Belt
- pensated Belt
- smission Belt
- elt
- Hose
- ractors Hose
- Hose
- draulic Hose
- and Gasoline ose
- Blast Hose
- m Hose
- Suction Hose
- Water Hose
- Chute Lining
- Launder Lining
- Industrial Brake Blocks and Lining
- Molded Rubber Goods
- Rubber Lined Tanks
- Rubber Covered Rolls
- Abrasive Wheels
- Bowling Balls



*The term *FLEXLASTICS* is a *MANHATTAN* Trade Mark. Only *MANHATTAN* can make *FLEXLASTICS*.*

1st YEAR OF RESEARCH

The record of the first 50 years of ...plishment is the pledge for the second half-century ...HATTAN is now entering with research, testing, ...and inspection as a basic policy, so there may be un... continuity to its contribution to industry. It will ...e be sound policy to keep ... with MANHATTAN.

...P AHEAD WITH MANHATTAN

THE MANHATTAN RUBBER MANUFACTURING DIVISION
of RAYBESTOS-MANHATTAN, INC.
EXECUTIVE OFFICES PASSAIC, NEW JERSEY

A Recent Installation of Four SARGENT STOCK DRYERS
in a Progressive New England Worsted Mill

A Production Problem Solved -

• • • **THIS IS THE IMPORTANT FACT!**

Advantages of this modern installation

— Stock dried at lower temperatures — The use of low pressure steam
— Lower power consumption — Less floor space required
— Costly repairs and breakdowns eliminated — A better product

Why not let SARGENT solve your Drying troubles ?

Important Defense Items by SARGENT	Machines for Smokeless Powder Plants • Machines for Synthetic Rubber Plants • Textile Machinery for the manufacture of uniforms • Machined parts for large caliber guns

C. G. SARGENT'S SONS CORPORATION

Graniteville, Massachusetts, U.S.A.

AMERICA'S WOMEN ANSWER THE CALL-

TO FREE MARINES TO FIGHT!

Quietly, competently, the U. S. Marine Corps Women's Reserve has taken over 125 non-combatant jobs, releasing thousands of the justly famed and superbly trained "devil dogs" to fight.

Likewise, the Women's Reserve has taken to heart the motto of the Marines, *Semper Fidelis* ... matching the high purpose, the devotion to duty and the deep sense of responsibility of its brothers-in-the-Corps.

Labor and Management at STANDARD salute the Women Marines and back them up with increased production and bond buying today for freedom tomorrow ... when greater quantities of STANDARD yarn will be released for peacetime products.

BRANCH OFFICES:

New York 16, N.Y. — 185 Madison Ave.
Chicago 54, Ill. — 940 Merchandise Mart
Greensboro, N. C. — Guilford Building
Reading, Pa. — Reading 6262

STANDARD DURENE • SELO • PREEMO
COMBED SAKS • THREADS • COMBED PEELERS

Made of Durene multi-ply mercerized cotton
4 WAYS BETTER than ordinary cottons
EXTRA COMFORT ...more absorbent
EXTRA STRENGTH ...longer wear
EXTRA QUALITY ...lasting lustre
EXTRA SERVICE ...easy to wash

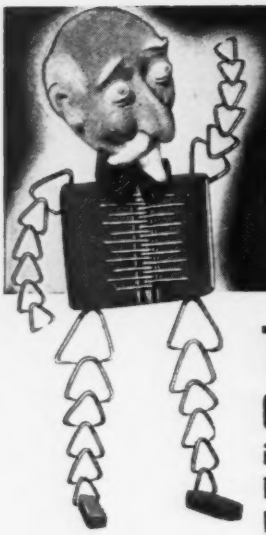
SPINNERS • TWISTERS • DYERS • BLEACHERS S-C-T

STANDARD-COOSA-THATCHER CO.

CHATTANOOGA 1, TENNESSEE

Sales Offices: 804-6 LAFAYETTE BUILDING, PHILADELPHIA 6, PA.

Representatives in principal Cities and in Central and South American Countries



30% Savings BY USING Clipper BELT LACING EQUIPMENT

The Timken Roller Bearing Co. of Canton, Ohio, has effected a saving of about 30% in consumption of belt hooks by using Clipper Belt Hooks, Clipper Lubrihide Pins and Clipper Speed Lacers.

You, too, can make worth-while savings by using ALL THREE Clipper products.

Remember, only Clipper Belt Hooks are packed with the long wearing **Lubrihide Pins.**

The **Clipper No. 9 Portable Lacer** develops pressures up to 16 tons. With such pressure, hook legs can be embedded flush with the surface of any kind of belt and points clinched.

The scientific action of the jaws forms a perfect line of well rounded loops permitting the use of maximum diameter **Lubrihide Pin,** also providing equal distribution of pulling strain on every hook. A belt joint so made will outlast by two to three times one made with an old-style portable lacer.

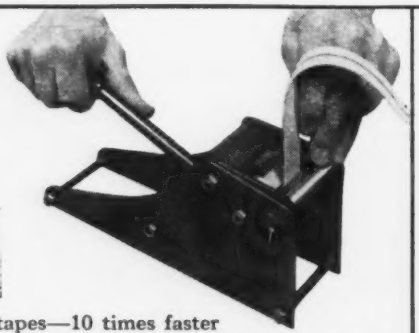
We suggest that you check YOUR belt lacing situation. Send for folder describing the powerful Clipper No. 9 Portable Lacer and other Clipper products. Phone your Mill Supply Jobber for a demonstration!

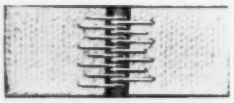
Clipper No. 9 Portable laces belts up to 6 inches wide in one quick, easy operation.

Scientific action of Jaws forms

a perfect loop for connecting pins.

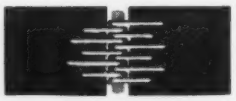
CLIPPER SPINDLE TAPE LACING EQUIPMENT





You can lace spindle tapes—10 times faster than stitching — with Clipper No. 25 Spindle Tape Hooks. The spinning frame is shut down only long enough to place the new tape on the pulleys and join the ends with the connecting pin — a short, easy operation. Tapes run true—last longer—run smoother—require less tension. VIBRATION is ELIMINATED.

CLIPPER CONDENSER TAPE LACING EQUIPMENT

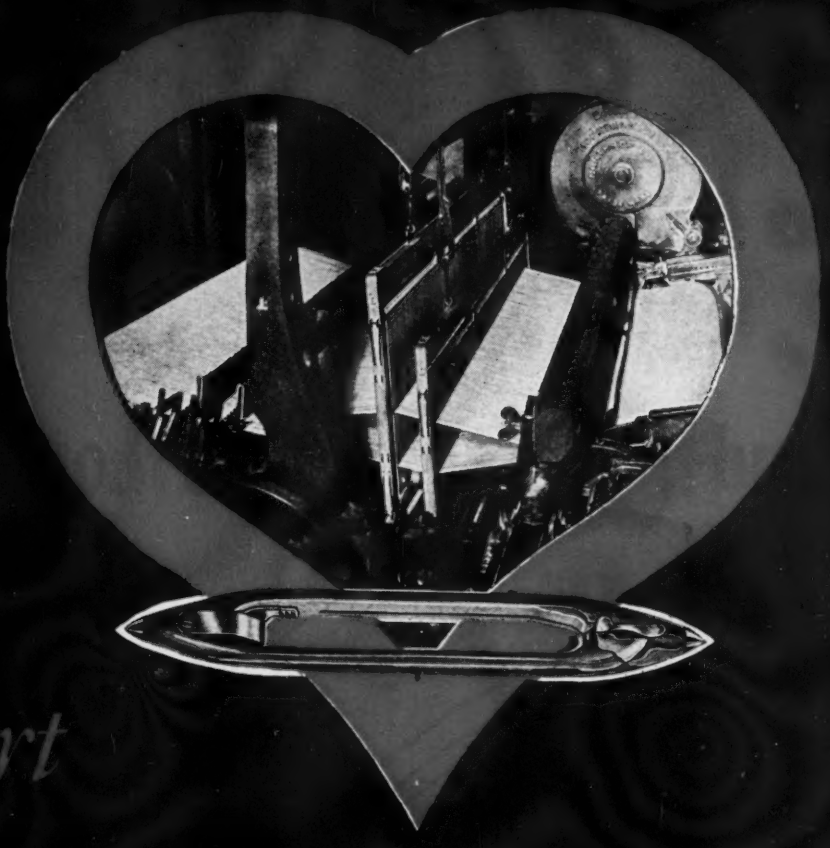


Condenser tapes are laced with Clipper No. 25 Condenser Tape Hooks. The joint is as flexible as the tape itself. Clipper Laced Condenser Tapes can be installed in a fraction of the time required for endless tapes. Tape may be purchased in the roll at considerable saving, and cut to length. WRITE FOR INFORMATION.

CLIPPER BELT LACER COMPANY GRAND RAPIDS, MICHIGAN, U. S. A.

QUALITY LOOM HARNESS EQUIPMENT

Sle-Hed-Co



The Heart

of any and every loom is

the Harness, Reed and Shuttle Equipment

Be sure, therefore that it is

Perfect

(all that science, research, skill and experience can make it)

And it is so easy to have it the Best

Buy the Flat Steel Loom Harness, Reed and Shuttle Equipment as made by

STEEL HEDDLE MFG. CO.

2100 W. Allegheny Avenue, Philadelphia, Pa.

SOUTHERN SHUTTLES DIVISION

Greenville, S. C.

Manufacturers of Superior

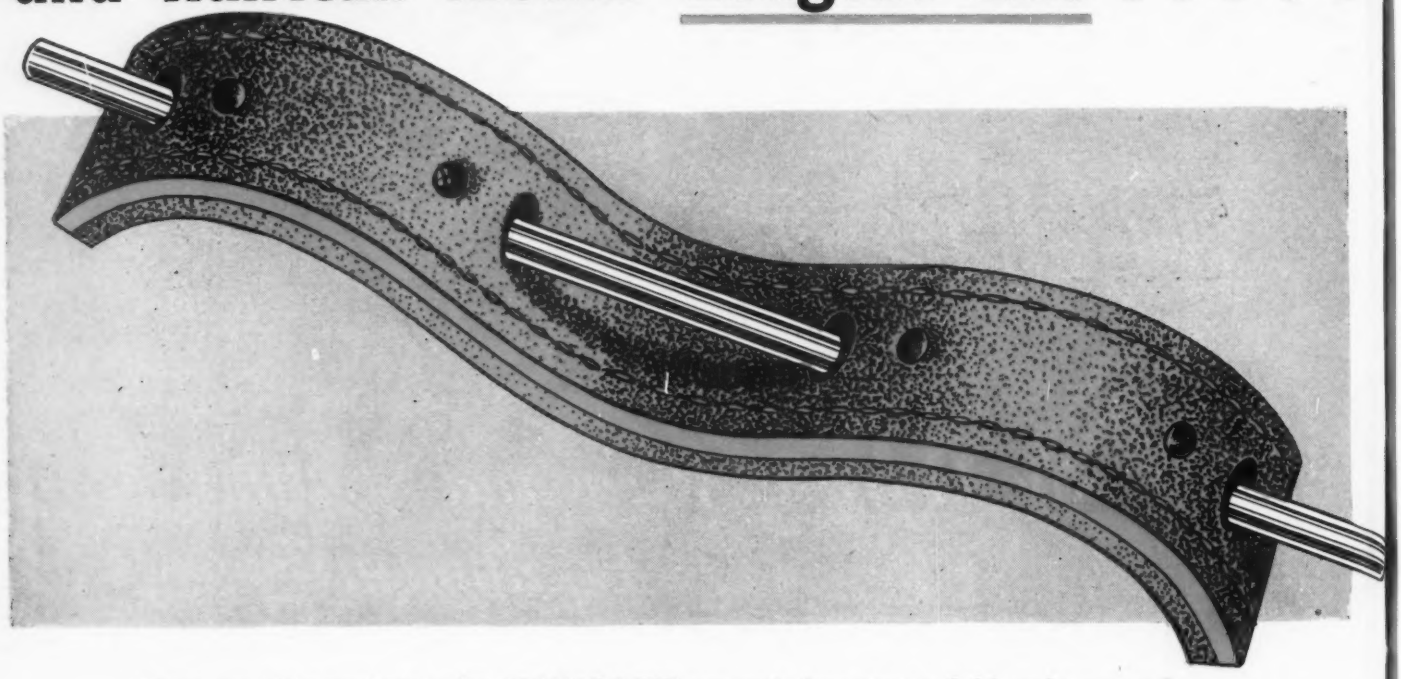
FLAT STEEL HEDDLES—HARNESS FRAMES—ALL TYPES OF LOOM REEDS—
TEMPERED DOGWOOD SHUTTLES—LOOM HARNESS ACCESSORIES

BRANCH OFFICES
ALL OVER
THE WORLD

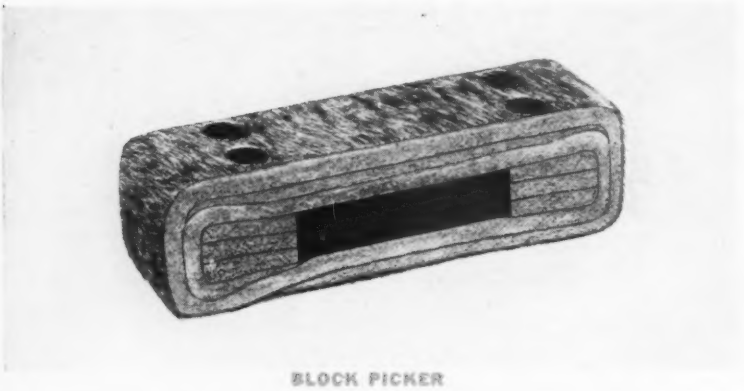
FIELD ENGINEERS
IN
EVERY DISTRICT

ORANGE *Means*

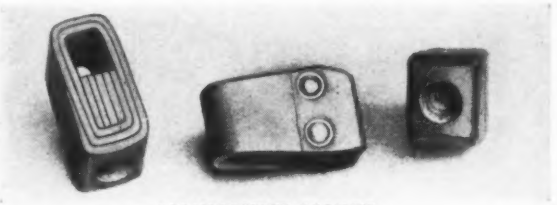
and Hairitan means Longest Life . . . . .



Every one of the products in the **ORANGE LINE** was made from start to finish under one roof . . . under one uniform control . . . for one specific type of service.

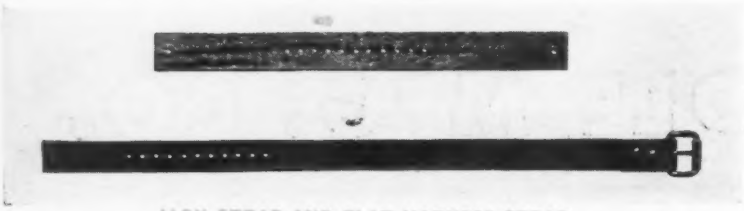


BLOCK PICKER

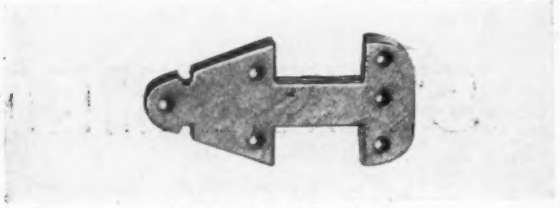


PICKMASTER PICKER

TWO-FOLD CHECK STRAP — STRAIGHT AND ENDLESS



JACK STRAP AND FLAT HARNESS STRAP



LUG HOLD-UP STRAP

HAIRITAN

lowest total cost of any Loom Leathers

If you have been accustomed to favor "European-type" hair-on tannages for loom leathers, here is a domestic tannage that is equal to the best of them in low stretch, tensile strength, resiliency, long life.

The reason Graton & Knight was able to introduce — in Hairitan — a superior tannage for loom services, lies in its control over *all* manufacturing processes. In the world's largest plant manufacturing industrial leather products, hides are carefully selected with certain ultimate requirements in mind. Then, all phases of each product's development are controlled to bring out the desired characteristics.

Check straps, for example, made from Hairitan, have extremely little permanent stretch . . . average 6500 lbs. tensile strength . . . yet weigh less, giving more to the pound.

Hairitan leather intended for other items in the line — pickers, jack straps, flat harness straps, spindle straps, round narness and dobby straps, etc. — is finished specifically for the service requirements they must meet.

All Hairitan leathers — hair-on and hair-off — are colored orange. You'll find that the leathers with *the orange color** will last longer . . . cost you less in the long run.

* *The ORANGE LINE*

ONE QUALITY CONTROL FROM HIDE TO LOOM

GRATON & KNIGHT COMPANY

WORCESTER 4, GRATON AND KNIGHT **MASSACHUSETTS**

Supplied by the leading distributors to the Textile Industry. . . . Look under "Graton & Knight" in "Belting" section of Classified Telephone Directory or THOMAS' REGISTER. See complete catalog in TEXTILE WORLD YEAR BOOK.

One CHEMICAL

Two RAYON-MAKING JOBS

ARMY E NAVY

High quality Caustic Soda is essential in the manufacturing of viscose rayon; it performs not one function, but two, before the yarn is spun. First, in an approximately 18% solution, it acts upon the pulp in the steeping press, extracting impurities and forming alkali cellulose. Later, it is added to the mixer in a dilute solution, acting upon the cellulose xanthate as the substance is thoroughly mixed until it becomes a homogeneous mass, known as viscose and is ready to be sent to the spinnerettes.

For such double-responsibility service, thorough and careful rayon chemists insist on chemicals of reputation and reliability.

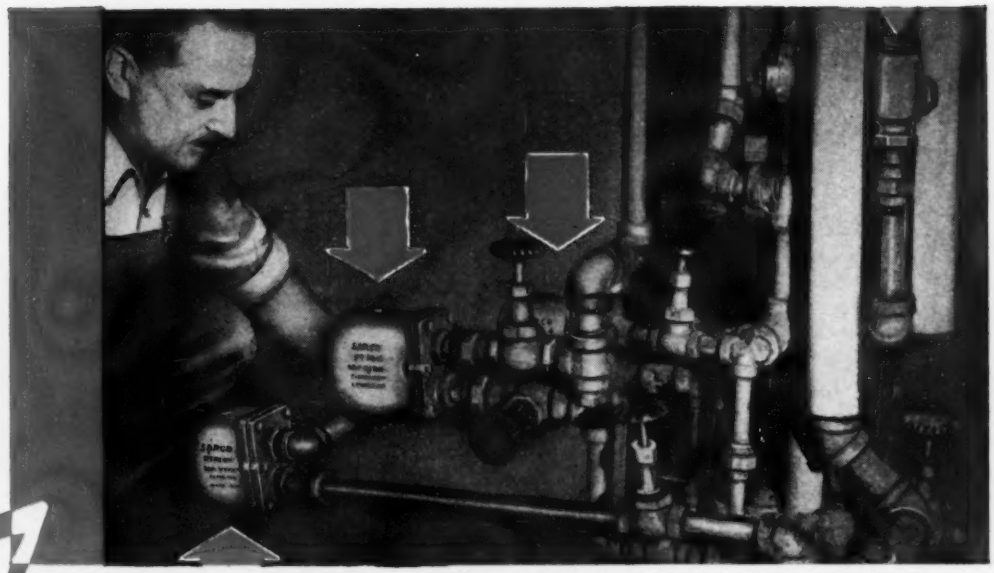
HOOKER Caustic Soda has served the rayon industry since its earliest days. HOOKER experience in Caustic Soda manufacture precedes the larger scale output of this man-made fibre. In fact, NaOH was one of the two original chemicals produced by the company when it was organized in 1906, one of a list which has now grown to more than a hundred.

The principal chemicals on this list, along with chemical formulas, molecular weights, descriptions, uses and shipping container data, are included in HOOKER Bulletin ___, a copy of which is yours for the asking.

HOOKER ELECTROCHEMICAL CO.
NIAGARA FALLS, N. Y.
New York, N. Y. • Wilmington, Calif. • Tacoma, Wash.

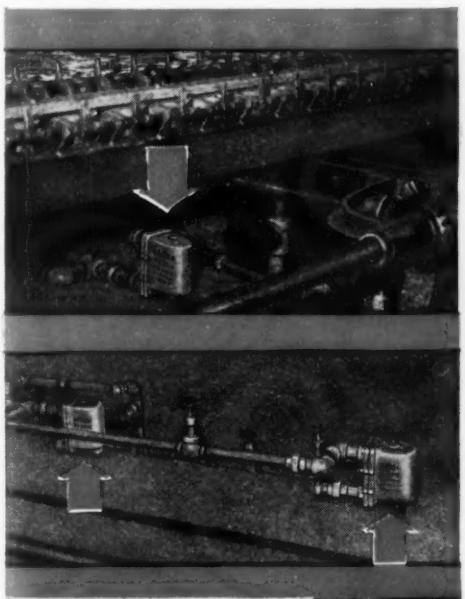
HOOKER · ELECTROCHEMICAL · COMPANY

HOOKER CHEMICALS

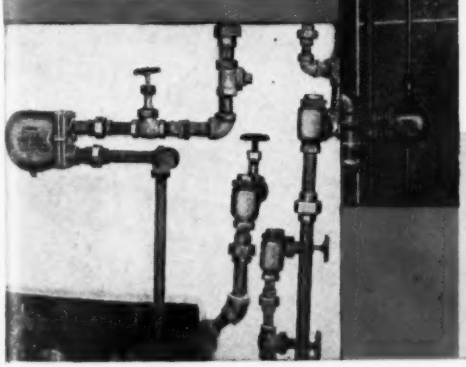


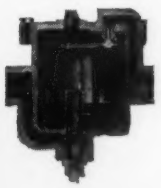
Three Sarco Float-thermostatic and one Sarco No. 9 on ager

Four SARCO ACES
IN THIS TEXTILE PLANT

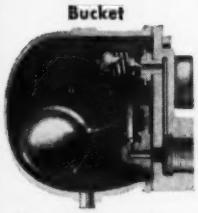


Sarco bucket trap on tenter frame. Two Sarco bucket traps on cloth dryer. Two Sarco float traps with type H as air vents on dryer. Three No. 9's and one float trap on ager.



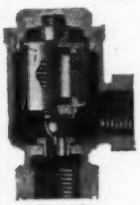


Bucket



Float-thermostatic

H trap



No. 9

If you don't want to gamble with your production output, you will see that every steam operated machine in your plant is provided with *exactly* the right kind of steam trap.

The illustrations show how four different types of Sarco traps work together like a team to provide smooth uninterrupted flow of production in this silk printing plant.

The Sarco No. 9 thermostatic trap is used for steam coils on dryers and similar operations where the load is reasonably steady. The Sarco Bucket trap was selected for the rolls and where the load fluctuates widely. The Sarco Float trap is employed to drain all steam lines and the little Sarco Type H is used for an air vent wherever one is needed.

As individual "Aces", or as teams of four, Sarco steam traps have been meeting industry's needs for a quarter of a century. They are made in a modern factory devoted exclusively to steam traps and temperature control.

The Sarco representative near you can give you the benefit of many years of experience in plants like yours, and can tell you which Sarco trap will be best for each job.

SARCO COMPANY, INC., 475 FIFTH AVENUE, NEW YORK 17 N.Y.

Represented in Principal Cities

SARCO Saves Steam

SARCO CANADA, LTD., 85 Richmond Street, West, TORONTO, ONTARIO 24

Department of Tomorrow

All over this land men are peering into beakers for a glimpse of things to come.

Not necessarily post-war products; they may be seeking replacements for materials that have gone to war. They strive to do better with less, and they succeed.

American ingenuity has triumphed over war shortages in many fields, including textile processing. People wear clothes in war or peace. They must be kept warm; they insist on style and quality.

This challenge to the textile chemist has met with surprising results. What seemed impossible has proved entirely practicable.

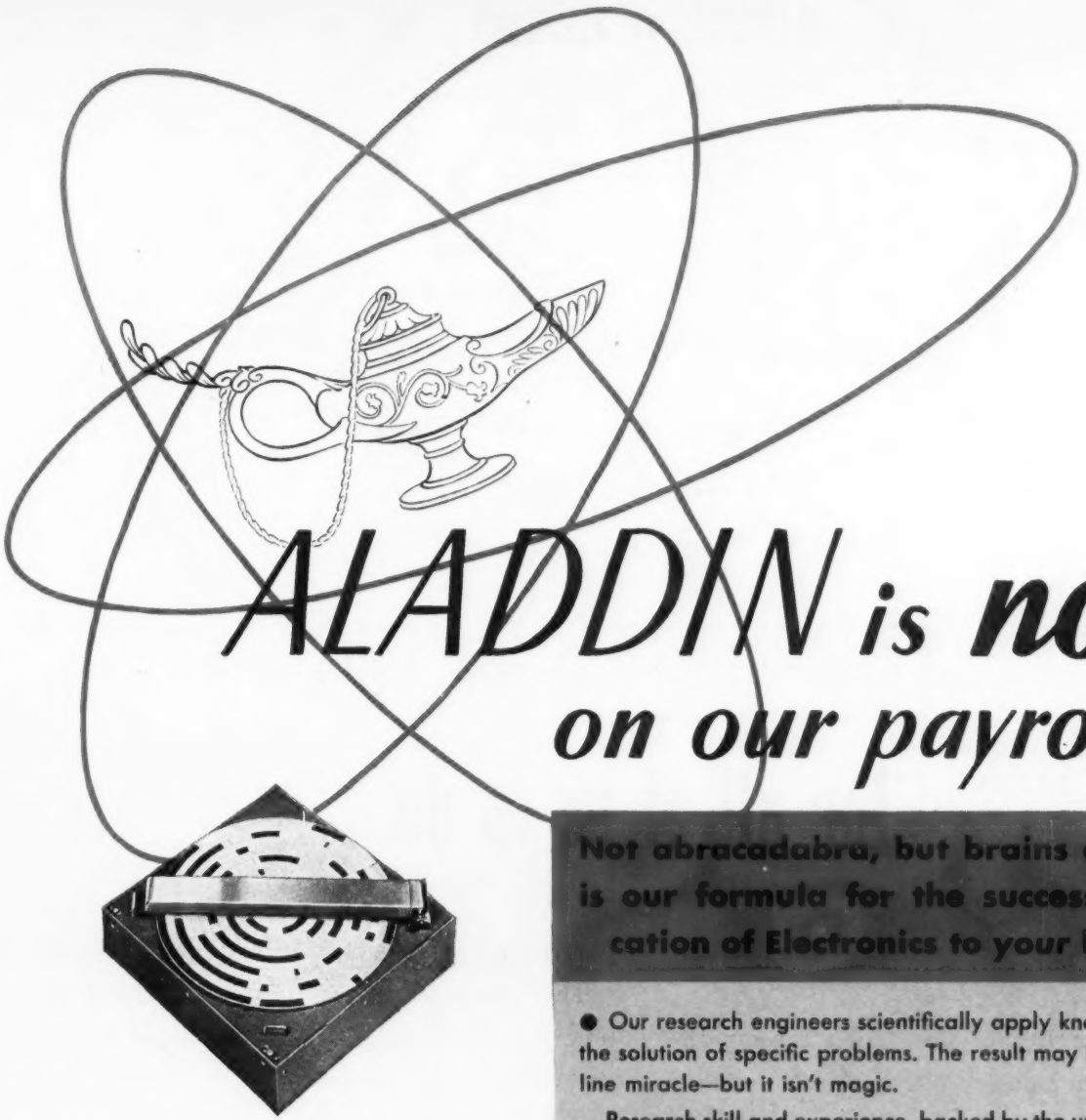
This scene in The Houghton Textile Laboratory is typical of many such searches for better processing products for all branches of the textile industry.

If you seek a rayon oil, or a detergent, or wetting agent, or cotton warp size, or wool conditioning oil—you will want to know what Houghton, with its recently augmented research facilities, has to offer. We invite inquiries for both the things to come, and those which, insofar as research is concerned, have already arrived, ready for your use.

E. F. HOUGHTON & CO., Philadelphia and Charlotte

303 West Lehigh Ave., Phila., Pa. 1301-5 W. Morehead St., Charlotte, N. C.

TEXTILE PROCESSING PRODUCTS



ALADDIN *is* **not** *on our payroll* > > >

Not abracadabra, but brains and sweat is our formula for the successful application of Electronics to your business.

● Our research engineers scientifically apply known principles to the solution of specific problems. The result may be a production-line miracle—but it isn't magic.

Research skill and experience, backed by the unsurpassed facilities of one of the largest organizations specializing in Electronics, and coupled with expert service at all times, are what we have to offer. Nothing awesome, mind you, but practical, scientific know-how and sound business practice that get results.

If this sane, "feet-on-the-ground" service is the kind of help you want on your postwar production planning, why not write: Engineering Department, General Electronics Industries, 342 West Putnam Avenue, Greenwich, Connecticut.

AUTOMATIC PROCESS CONTROL

This new development by the research laboratories of General Electronics Industries provides automatic control of chemical processes and also of production machinery, by means of printed charts which may be replaced or interchanged as readily as phonograph records.

Other products manufactured include:

ELECTRONIC CONTROLS • VACUUM TUBES
HYDRAULIC SERVOS • COMMERCIAL RADIO EQUIPMENT
ELECTROSTATIC HEATING UNITS UP TO 250 KW.
ELECTROMECHANICAL DEVICES

ARMY-NAVY "E" WITH STAR awarded to Auto-Ordnance Corporation for continued excellence in production of "Tommy" Guns.

GENERAL *Electronics* INDUSTRIES

Division of Auto-Ordnance Corporation

GREENWICH • STAMFORD • BRIDGEPORT • NEW MILFORD • NEW YORK

CONTRIBUTE TO INFANTILE PARALYSIS FUND—JANUARY 14TH TO 31ST

There's still a big job for all of us to do

NOTHING MATTERS NOW except the swift and certain winning of the war.

Through the prodigious production accomplishments of American industry, our men and our Allies have been able to swing the initiative in fighting to our side.

To keep it...to continue a steady march on the bloody road to victory... we've got to give our men in the thick of the fight everything they'll need. And give it to them faster and faster!

For you and for us there's *still* a big job to be done. The history of the amazing production performance of American industry is *still* to be written.

Every single man-hour, every bit of brain power, every ounce of industrial energy expended for any purpose other than victory will damage the war effort.

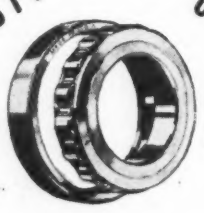
The entire production of Hyatt Roller Bearings now goes into planes our men fly... into tanks they drive... into ships they sail... into guns they man... into equipment they need to win.

In the midst of pouring out a tremendous stream of bearings for this vital war use, we pause to again thank industry for its grand cooperation and understanding, and for helping us meet war's demands for super-precision production on a mass scale.

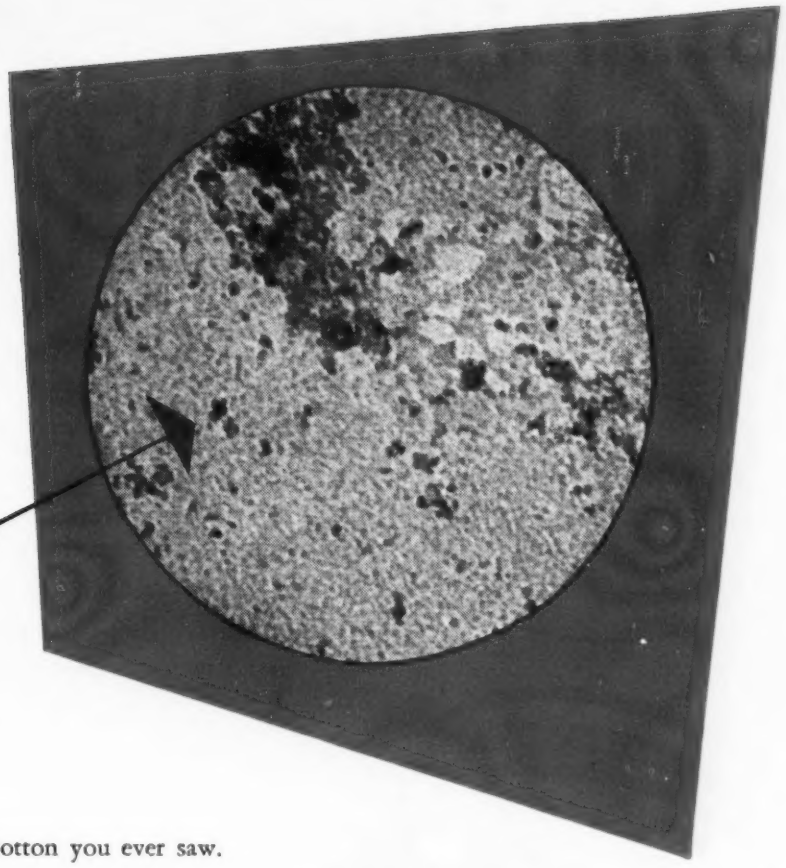
As soon as the war's won, and this job is done, Industry and Hyatt will have another big job to do together... when we can work in Peace.

Hyatt Bearings Division, General Motors Corporation, Harrison, N. J.

DIVISION OF

HYATT BEARINGS  **GENERAL MOTORS**

ever SEE a molecule?



THIS is the most intimate view of cotton you ever saw.

Many of the tiny particles you see here at 100,000 times their actual size, really measure about 1/200th of a micron, or 1/5,000 000th of an inch in width.

They are probably individual molecules, the first cellulose molecules ever photographed.

A few years ago micrographs of anything smaller than 1/10th of a micron, or 1/250,000th of an inch, were completely beyond the realm of possibility. Now objects as small as these molecular-size bits of cellulose are photographed almost as a matter of course with the electron microscope at Monsanto's Central Research Laboratories.

So what does this mean to a busy, practical textile man?

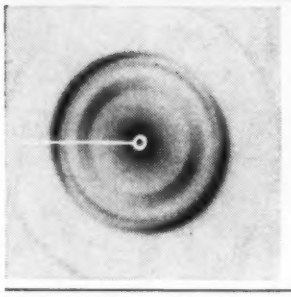
It means this:

With new research tools like the electron microscope, the chemical and textile industries together are learning important new lessons about the fundamental nature of textile fibres — which lead, in turn, to important new lessons in how to produce *better* fabrics *cheaper*.

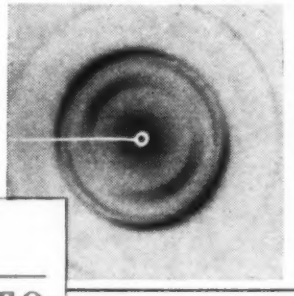
With specialists like the skilled and highly trained electron microscopist who took this micrograph to back them up, the practical textile technicians who direct Monsanto's technical service to textile customers are *better* equipped to *serve you* more effectively. MONSANTO CHEMICAL COMPANY.

Divisions co-operating in Monsanto textile research and service: *Merrimac Division*, Boston, *Plastics Division*, Springfield, Mass., and *Organic* and *Phosphate Divisions*, St. Louis. Address inquiries to Merrimac Division.

To get micrograph above, mature cotton fibres were soaked 15 hours in concentrated NCl at 0°C., washed, rubbed in mortar with distilled water, then a drop of suspension was evaporated on collodion membrane.



These X-ray diagrams of treated and untreated (below) fibres show substantially same degree of preferred orientation. Ordinary microscope revealed that fibres were still intact but swollen to about twice normal size.



When rubbed, however, treated fibres disappeared. Presumably there was enough degradation of the molecules to destroy mechanical strength but not enough to disintegrate the fundamental cellulose crystal lattice.

The Textile
SERVING INDUSTRY
WHICH SERVES MANKIND

MONSANTO
CHEMICALS AND PLASTICS

Maintaining

HIGH STANDARDS *for you* •

Olate's HIGH MANUFACTURING STANDARDS Help Maintain YOUR HIGH PROCESSING STANDARDS

IF you could see the care with which Olate is made—at every step in its manufacture from the careful selection and refinement of its basic oils to the packaging of the finished product—you'd understand the real significance of high manufacturing standards.

You'd understand, too, why our strict maintenance of Olate's high standards of excellence are bound to produce a soap with the necessary qualities to meet your own exacting processing needs.

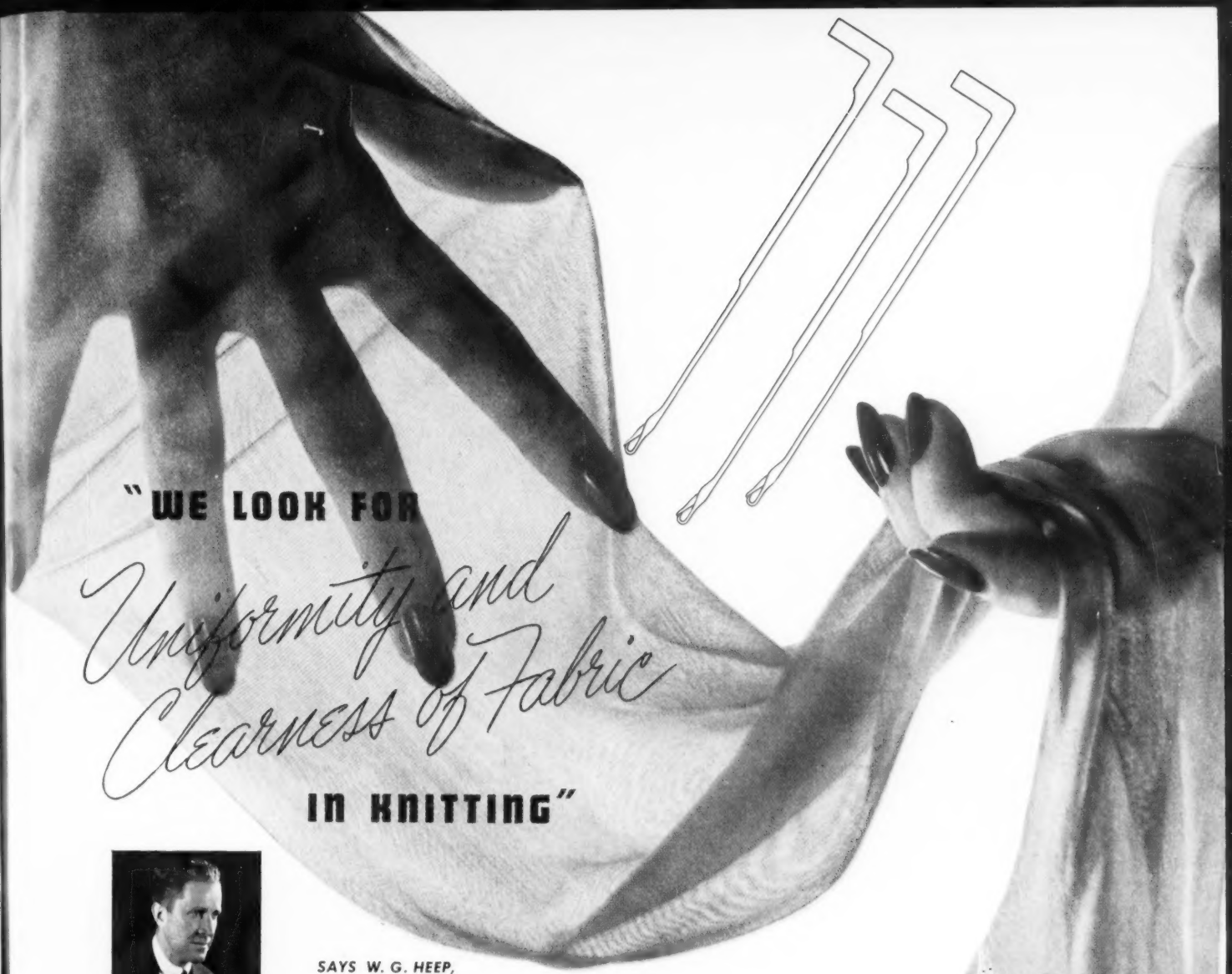
Thank these exacting processing safeguards for Olate's time-tested characteristics—its uniform purity . . . its ready solubility . . . its thorough yet mild cleansing action . . . its resistance to oxidation and rancidity.

Small wonder that today—when the unfailing performance of any processing agent is so vitally important—many of America's busiest textile mills are depending upon Olate to help "deliver the goods."

Olate

the universal textile soap

* A Product of PROCTER & GAMBLE



"WE LOOK FOR

Uniformity and Clearness of Fabric

IN KNITTING"

SAYS W. G. HEEP,
WOMEN'S STOCKINGS BUYER,
LORD & TAYLOR

"Good knitting is a very necessary factor in women's stockings today, especially with so many new yarns being used. We look for that smooth uniformity of stitch that means good appearance, good fit and extra wear. We are also interested in the new sheer effects now being produced with readily available yarns through the use of special knitting techniques. These are all points that appeal to consumers today."

Yes, good knitting is the basic factor of quality in all stockings. Choose your needles with this fact in mind, and your choice will be Torringtons, the machine-made, machine-tested needles. They have proven their quality over the years in hundreds of mills throughout the world. There's a Torrington Needle for every knitting purpose.

TORRINGTON *Latch Needles*

THE TORRINGTON COMPANY, Torrington Conn., U. S. A.
Established 1866
Branches: New York • Philadelphia • Chicago • Greensboro, N. C.
Boston • St. Louis • Toronto, Canada

Yes, these are ALL Needle Bearings ...

TYPE DC

TYPE NCS

DESIGNED FOR TODAY'S NEEDS AND TOMORROW'S TRENDS—THEY OFFER A UNIQUE COMBINATION OF ADVANTAGES

You may not have realized how many *different* types of Needle Bearings have been developed since the first Torrington Needle Bearing was introduced.

Some of them are illustrated here.

Common Advantages

All of them employ the basic principle of a full complement of small diameter needle rollers within a single, compact retaining raceway. And all of them offer the characteristic advantages of the original Torrington Needle Bearing:

1. Small size, light weight and compact design
2. High radial load capacity and elimination of stress concentration
3. Unit construction which facilitates handling and installation
4. Efficient lubrication; freedom from maintenance attention
5. Low cost

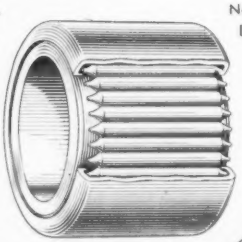
For Special Requirements

Each of the "newer" types is designed for a particular task . . . a particular set of conditions.

Some of them were so well established even before the war as to be almost universally used for certain applications. For example, the NCS Type Needle Bearing, of rugged construction, designed for heavy service, and available in standard sizes to fit an inner race of from $\frac{5}{8}$" O.D. to $5\frac{1}{2}$" O.D., is widely employed in equipment for the oil industry where service conditions are severe and rough "handling" the rule.

Others are the result of wartime demands for greater efficiency in speeding production lines and stepping up performance records. The AT Type Needle Bearing, for instance, has a heavy, through hardened outer race designed to give maximum capacity obtainable from the rollers used. It has found wide application in the aircraft construction where it is used with standard AN bolts and is designed to have a static non-Brinell capacity equal to the single shear strength of the bolt. Standard sizes in the AT Type range from 0.1900 to 1.0000" to fit on bolts No. 3 to 16.

TYPE AT



DC (INNER RACE)

For Postwar Designs

Where the efficiency of anti-friction operation is desired, and space, weight and cost are vitally important considerations—as they will be in designing to meet postwar trends—Needle Bearings provide the answer!

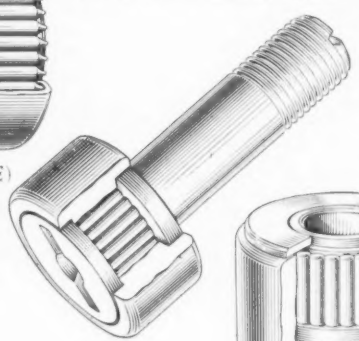
With the development of a complete line of all types, The Torrington Company offers the product designer and engineer a selection to meet virtually *any radial load requirement*. The experience of Torrington engineers is available to aid in design and application of Needle Bearings to *your* particular job. A copy of our current Catalog No. 116 will give you an outline of the types, sizes and capacities currently available for essential needs. And if our engineering staff can assist in selecting the right type for a particular job, write, outlining your need.

THE TORRINGTON COMPANY

Established 1866 • Torrington, Conn. • South Bend 21, Ind.
"Makers of Needle Bearings and Needle Bearing Rollers"

New York Boston Philadelphia
Detroit Cleveland Seattle
San Francisco Los Angeles
Chicago Toronto London, England

LET'S GO! U.S.A. KEEP 'EM FLYING!



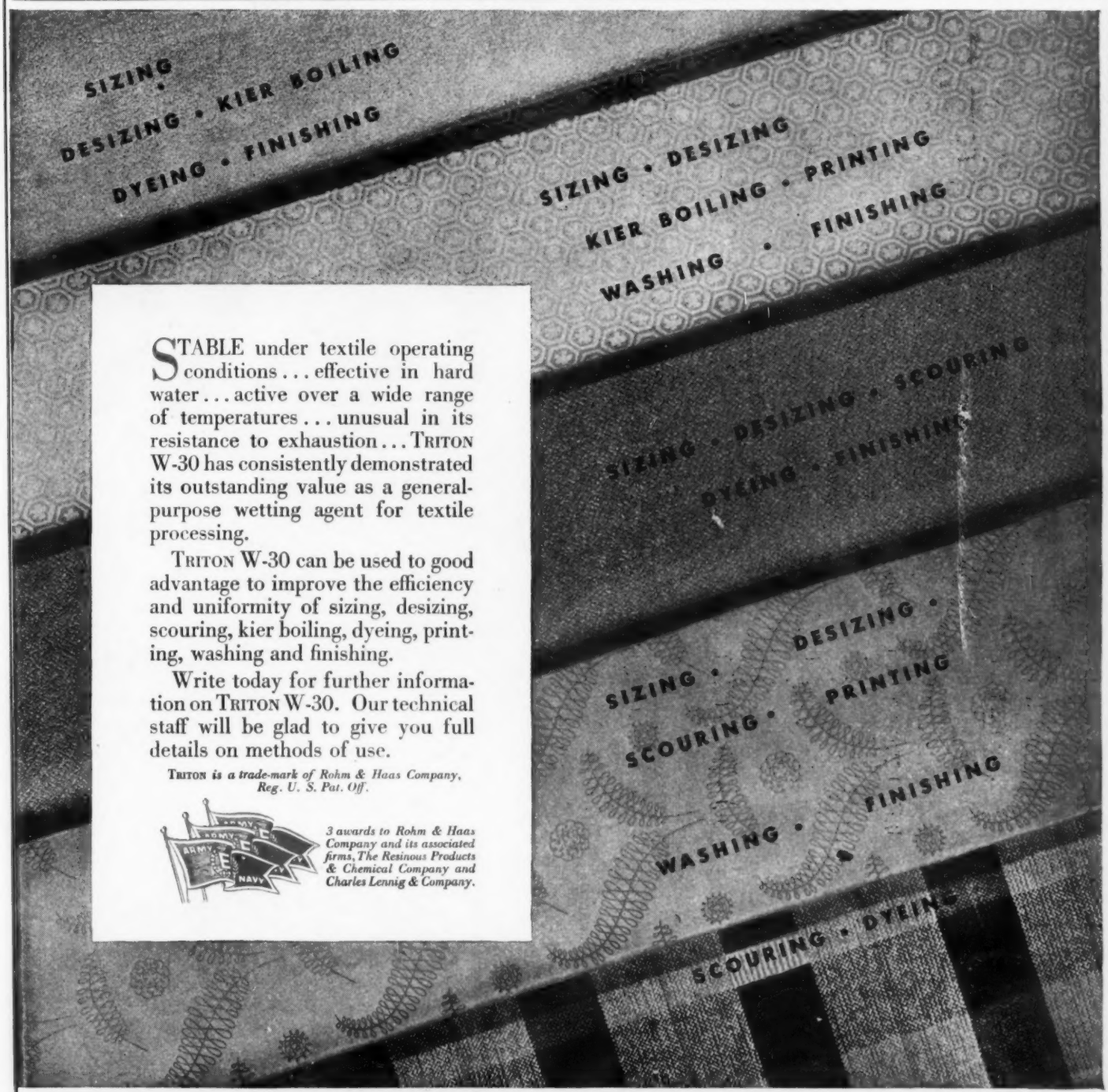
TYPE RC

TYPE FDT

TORRINGTON
NEEDLE BEARINGS

Time-tested leadership as an all-purpose surface-active material

TRITON W-30



STABLE under textile operating conditions . . . effective in hard water . . . active over a wide range of temperatures . . . unusual in its resistance to exhaustion . . . TRITON W-30 has consistently demonstrated its outstanding value as a general-purpose wetting agent for textile processing.

TRITON W-30 can be used to good advantage to improve the efficiency and uniformity of sizing, desizing, scouring, kier boiling, dyeing, printing, washing and finishing.

Write today for further information on TRITON W-30. Our technical staff will be glad to give you full details on methods of use.

TRITON is a trade-mark of Rohm & Haas Company, Reg. U. S. Pat. Off.

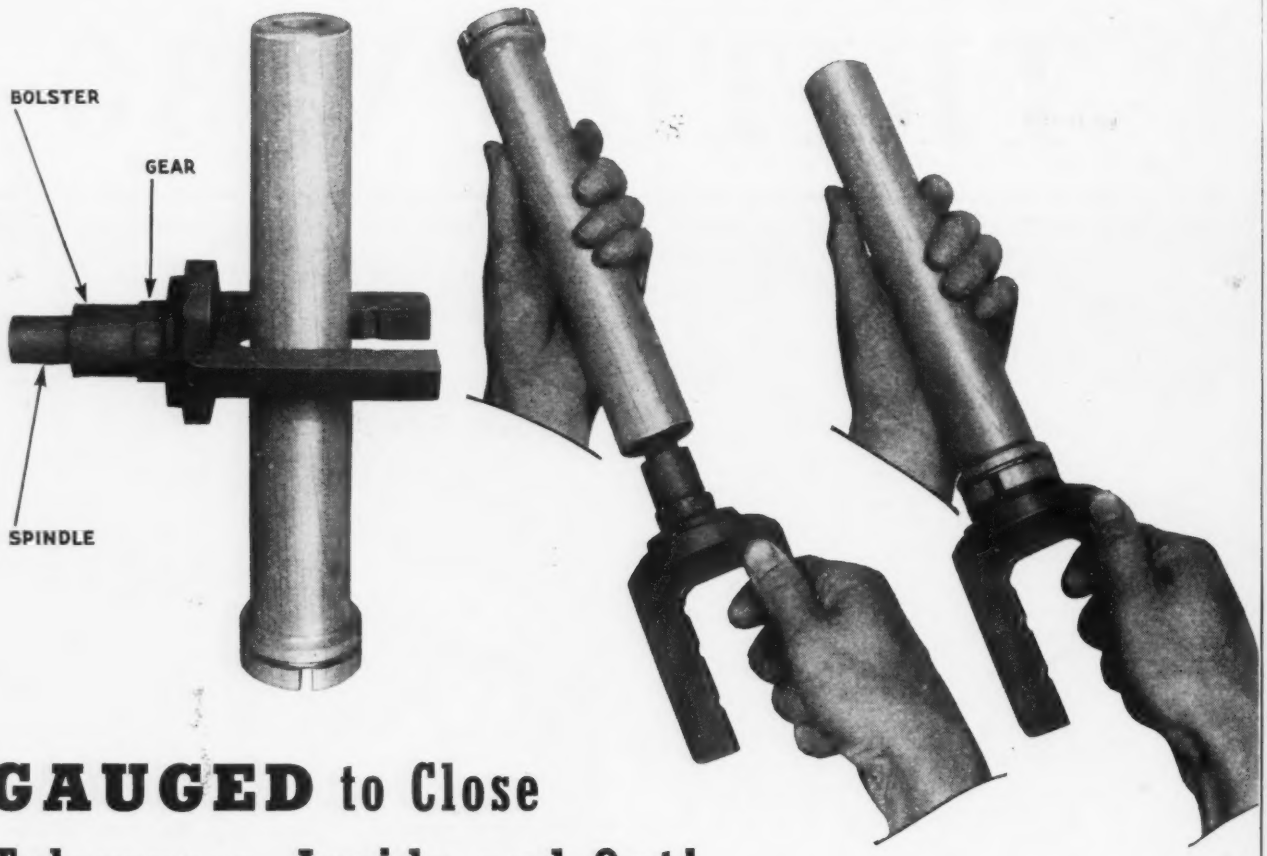
3 awards to Rohm & Haas Company and its associated firms, The Resinous Products & Chemical Company and Charles Lennig & Company.

ROHM & HAAS COMPANY

WASHINGTON SQUARE, PHILADELPHIA 5, PA.

Manufacturers of Chemicals for the Textile, Leather and other Industries . . . Plastics . . . Synthetic Insecticides . . . Fungicides . . . Enzymes

U S CARD ROOM BOBBINS



GAUGED to Close Tolerances, Inside and Out!

Eliminate bad bobbins – split, cracked, distorted, off-size – and you'll automatically end one frequent cause of uneven roving and drawing, of uneven yarn strength! Go over your card room bobbins and replace all misfits with U S Card Room Bobbins – correct to gauge on every exterior and inside dimension – accurately fitted to your mill spindles, bolsters and gears.

Diameter tolerances for speeders with 6", 7", or 8" traverse are guaranteed not to exceed .0116. On Intermediates and Slubbers 9", 10", 11", and 12" traverse, not to exceed .0156 either side of diameter specified. Equal care goes into selecting, drying and turning stock and applying the oil and lacquer finish, inside as well as out, that guards against distortion and prevents bobbins gathering lint.

Ask our technically trained U S Representatives to help eliminate bothersome operating troubles. The complete line of U S Textile Accessories – Bobbins, Shuttles, Spools, Cones, Rolls, Tubes and other items – provide exactly what it takes.

U S Why No. 5
Watch for More U S Whys in these Pages

THE SEAL OF QUALITY AND SERVICE SINCE 1857
US

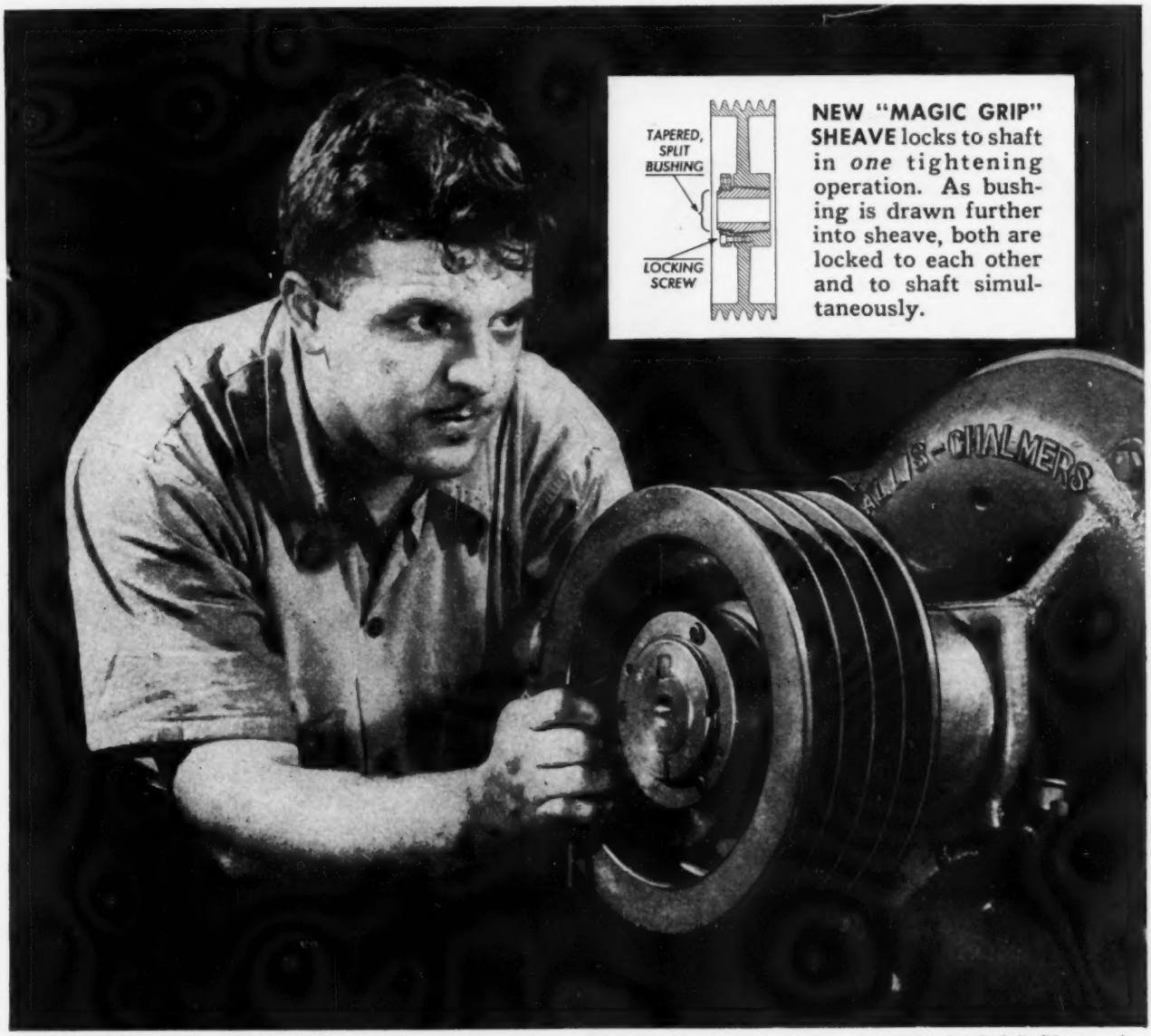
U S BOBBIN & SHUTTLE CO.

LAWRENCE, MASS.

PROVIDENCE, R. I. JOHNSON CITY, TENN. GREENVILLE, S. C. CHARLOTTE, N. C

CHICAGO AGENT: Albert R. Breen, 20 E. Jackson Blvd. CANADIAN AGENT: W. J. Westaway, Montreal
ALABAMA AGENT: Young & Vann Supply Co., Birmingham

PRODUCT OF THE MONTH


TAPERED, SPLIT BUSHING
LOCKING SCREW
NEW "MAGIC GRIP" SHEAVE locks to shaft in *one* tightening operation. As bushing is drawn further into sheave, both are locked to each other and to shaft simultaneously.
ALLIS-CHALMERS

Slide it on as a complete unit, line it up, and lock it — that's all there is to it with "Magic Grip" Sheaves!

MILWAUKEE, WIS.—Allis-Chalmers announces the new "Magic Grip" Sheave . . . designed to save man-hours and money by going on or off faster than any other sheave on the market. New "Magic Grip" Sheave fits undersize or oversize shafts, centers perfectly, runs smoothly. Send for Bulletin B-6310.

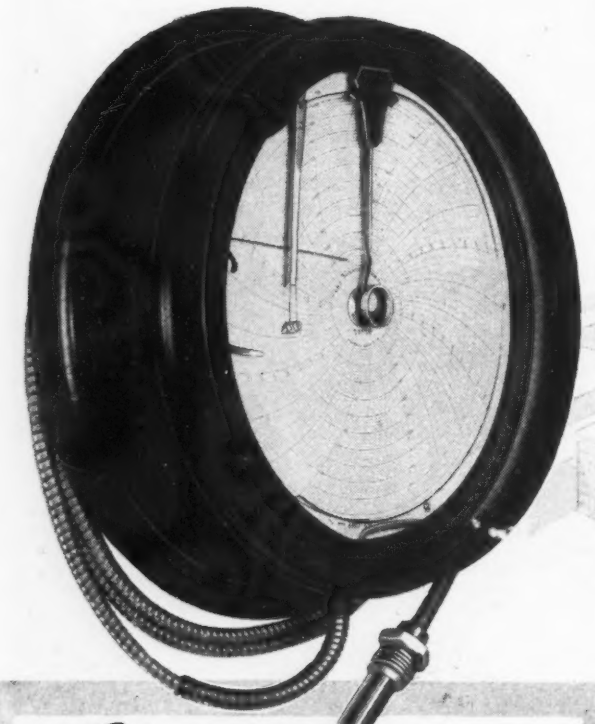
A 1679

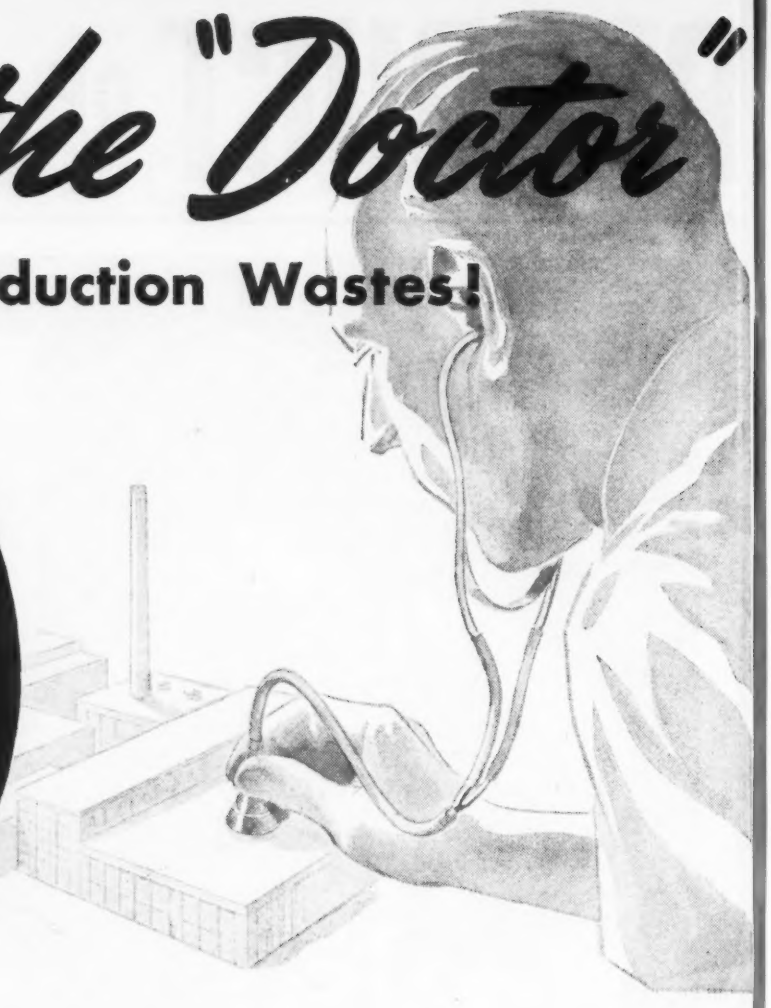
WE WORK FOR VICTORY · WE PLAN FOR PEACE

ALLIS-CHALMERS · MILWAUKEE · WISCONSIN

Here's the "Doctor"

to cure Production Wastes!





Check THESE APPLICATIONS

Here are just a few of the temperature points where use of Foxboro Temperature Recorders may point out important savings:

AGEING MACHINES	DRYERS
RAYON BARATTES	WASHERS
BLEACH KIERS	SLASHERS
STEAM BOXES	DYE TUBS
SIZE BOXES	SHREDDERS

Unsuspected temperature fluctuations may be wasting your time, fuel and materials . . . causing needless losses in efficiency. Daily records of these temperatures will show just where the wastes occur . . . enable speedy "diagnosis" and correction!

You can get these records, continuously and inexpensively, with recording thermometers. By specifying Foxboro Temperature Recorders, you'll make sure of getting them *accurately and dependably!*

Foxboro Temperature Recorders are precision-engineered to meet toughest industrial needs for accuracy, endurance and trouble-freedom. Their ultra-sensitive thermal system reacts instantly to slightest temperature changes. Their light, strong recording mechanism "writes it down", day-in, day-out for years without maintenance!

Write for Bulletin 198-2 containing the full story of these automatic aids to waste-elimination. **The Foxboro Company, 128 Neponset Avenue, Foxboro, Mass., U.S.A.** Branches in principal cities of U. S. and Canada.

FOXBORO

REG. U. S. PAT. OFF.

TEMPERATURE RECORDERS

PUT MOLD OUT OF BUSINESS

DOWICIDES CONTROL
Mold Decay Termites

DOWICIDE

GERMICIDES AND FUNGICIDES

Other Dow Products serving the Textile Industry: Ethocel, Saran, Methocel, Caustic Soda, Vat Dies and many others.

Penicillin is one of the rare examples of mold doing a beneficial job. But for the most part, mold has always been an enemy—especially in your business and in your product.

Dow has devoted many years' research to the development of 17 related products—the Dowicides—to defeat mold and bacteria growth in their attacks on industry. These products are, in a sense, new, but they are nevertheless already doing an outstanding job in putting mold out of business in the paper, paint, textile and leather fields.

Sizing materials are often held in solution form for extended periods, and are susceptible to mold attack. Dowicide is used extensively in the textile industry to prevent such attack. Dowicides are also incorporated into fabrics to prevent mold growth on the textile itself wherever it may be exposed to high humidity. When materials are brought in contact with the soil, Dowicides can also be employed to provide rot resistance. The application of Dowicides to textiles is a simple addition to standard manufacturing processes. Write for details on how to put mold out of business—your business!

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It is hard to conceive that contacting surfaces can be operated against each other and not cause wear. But tests prove this is not unusual when LUBRIPLATE Lubricants are used. This "Modern Lubricant" is more than top quality petroleum. It contains elements not found in any other oils or greases.

LUBRIPLATE maintains a wear-resisting, load-bearing film on shafts, bearings, gear teeth and other contacting moving machine parts. The destructive consequences of friction are therefore reduced to an unbelievable minimum. LUBRIPLATE protects machine parts against rust and corrosion. Its long life and stay-put properties make LUBRIPLATE very economical.

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No. 3—Ideal for general oil type lubrication. Ring oiled bearings, wick feeds, sight feeds and bottle oilers.

No. 8—Because of its high film strength and long life reflects outstanding performance in most types of enclosed gears (speed reducers).

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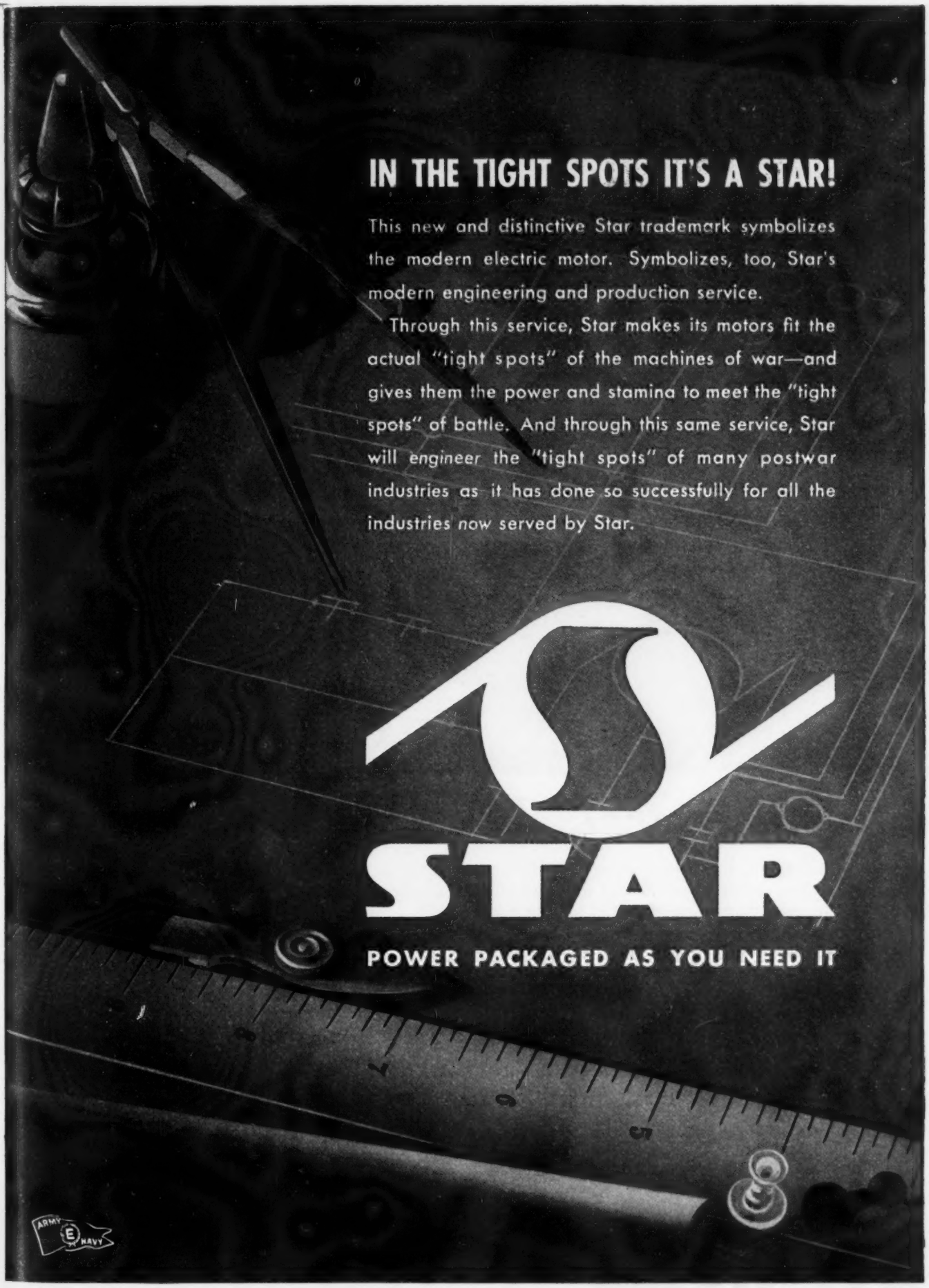
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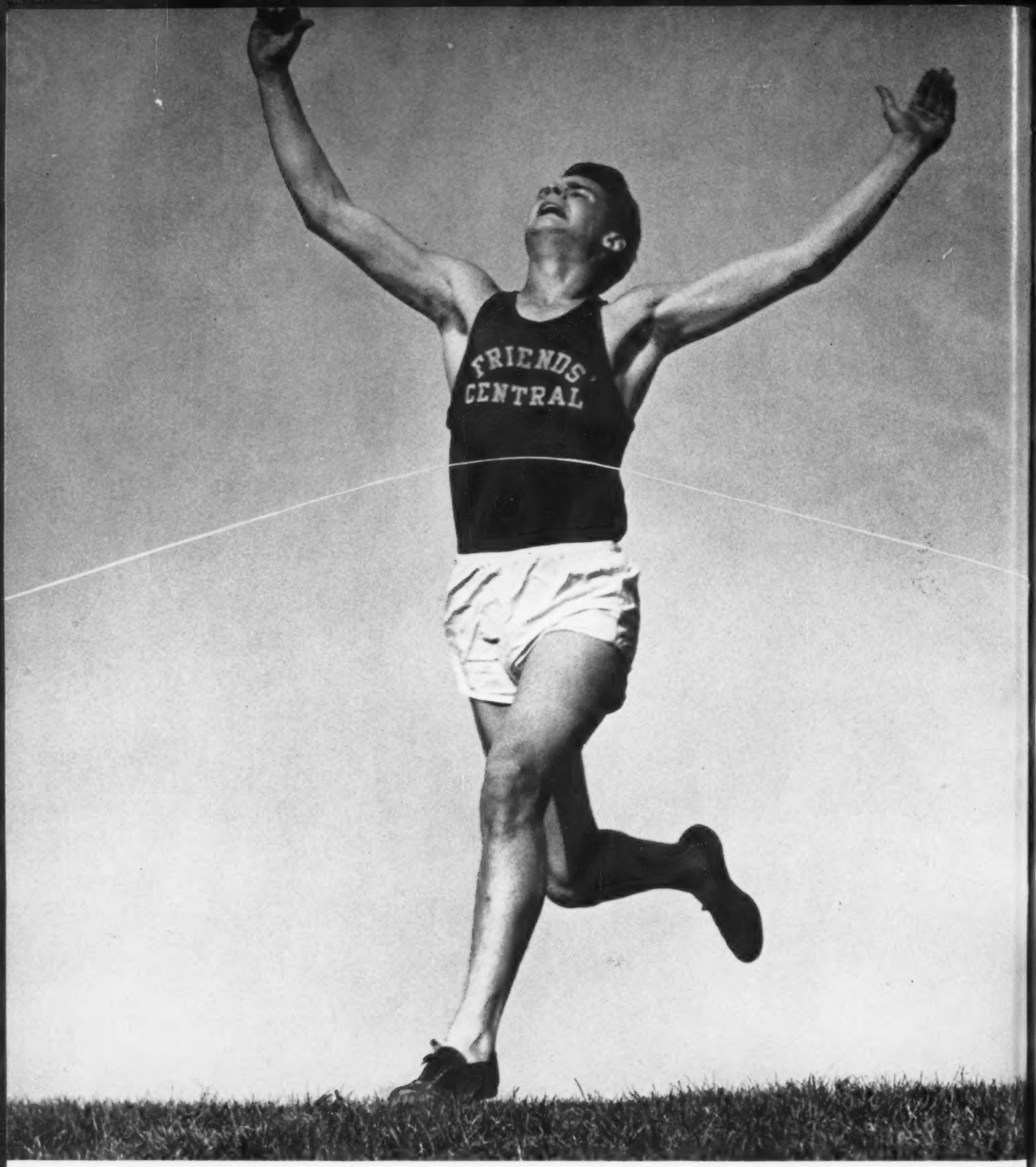

"Who hangs on, wins."
PENNSYLVANIA GERMAN PROVERB

ARMY (E) NAVY

First award in America of the 3-Star Army-Navy "E" made to TMW for Ordnance production up to January 25, 1943.

Until the Victory is Won! . . . The men and experience back of Reading Full-Fashioned Knitting Machines are enlisted for the duration. We *cannot* give you new machines — but we *will* do the next best thing: Our engineers will do their utmost to help you keep your present equipment at highest efficiency. *Let us tell you about our complete reconditioning service and what it means in terms of better fabrics and bigger profits.*

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What to do about Rust?

Make this Test

Immerse any rusty nail in a small quantity of Cities Service Rust Remover. If badly rusted, allow to remain for several minutes. You can actually see the rust dissolve.

See the Results

Remove nail and wipe dry with cloth or tissue. Note the complete absence of rust and the way the original surface reappears.

CITIES SERVICE RUST REMOVER has been tested for four years throughout a small, highly industrialized area in the East, where it has earned a unique reputation for performance. RUST REMOVER is a clean, clear liquid, practically odorless, non-inflammable, easily applied, and harmless to handle by those not allergic to specific chemicals. It is fast-acting, and, although heating somewhat accelerates results, general application is recommended at normal temperature (60°-90°F.). RUST REMOVER is effective on chromium, copper, aluminum, steel and iron.

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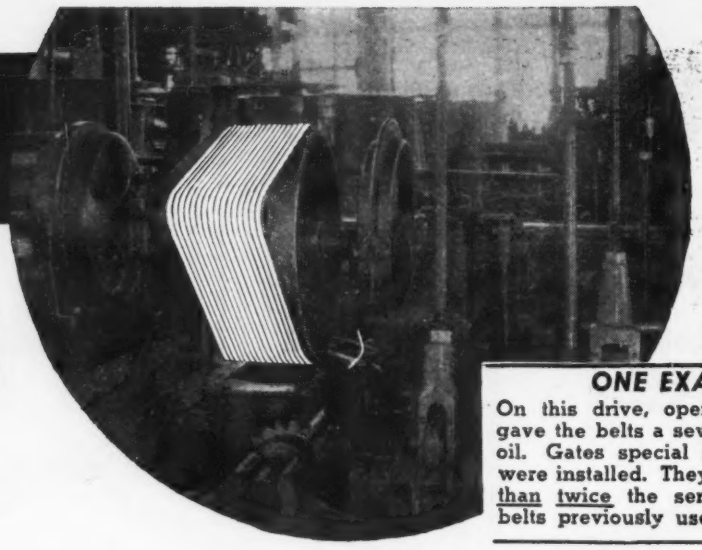

ONE EXAMPLE
On this drive, operating conditions gave the belts a severe soaking with oil. Gates special synthetic V-belts were installed. They are giving more than twice the service life of any belts previously used.

GATES V-Belts Made Entirely of *SYNTHETIC Rubber

Have Been Wearing *2-Times* to *3-Times* as Long as ANY *Natural Rubber* Belt on Drives where *Heat* and *Oil* Conditions are *Especially* Severe!

Five years before there was any warning of a rubber shortage, Gates was already supplying American Industry with thousands upon thousands of V-belts made entirely of SYNTHETIC rubber.

***A very special synthetic rubber was chosen by Gates. This synthetic had not been developed as merely a "substitute" for rubber. In certain important applications it is greatly superior to natural rubber. Under severe conditions of heat and oil, for example, the Gates special synthetic V-belt in hundreds of plants is actually outwearing belts of natural rubber by as much as 230%!**

This long record of success in making V-belts of synthetic rubber stands unrivaled in the rubber industry. No other maker of V-belts has had anything approaching Gates' experience and proved success in this field.

This is particularly important to you now. The time has come when Gates' superior "know-how" in the making of synthetic rubber V-belts can be put to work for you right in your own plant.

You have only to look in your telephone directory and call the Gates Field Engineer. He will put at your service the full benefits of Gates' knowledge and experience without the slightest obligation.

THE GATES RUBBER COMPANY

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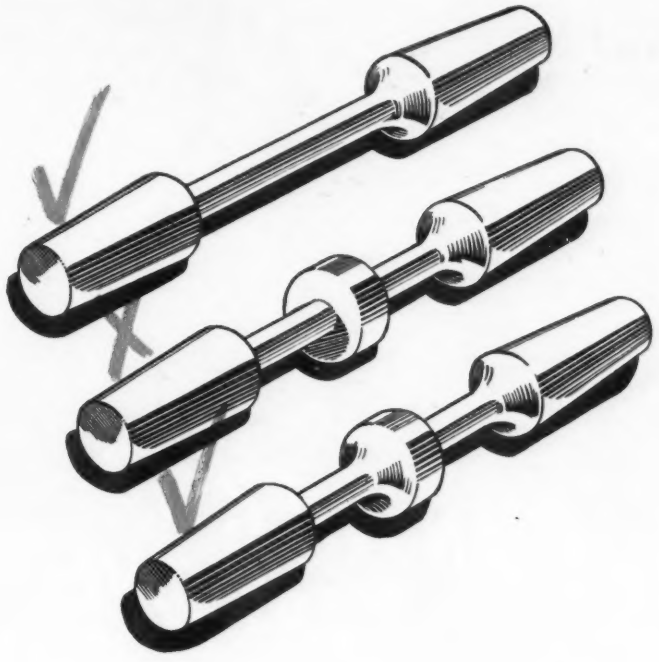
OF COURSE YOU'LL BE USING MAGNESIUM

It's things like this your designers need to know



Magnesium alloys have good resistance to fatigue. Like other metals, however, they are sensitive to the effect of notches and other stress-raising factors. For example, the middle test bar shown above, with its sharp corners at the cast-on center ring, has only half the fatigue strength of its two neighbors.

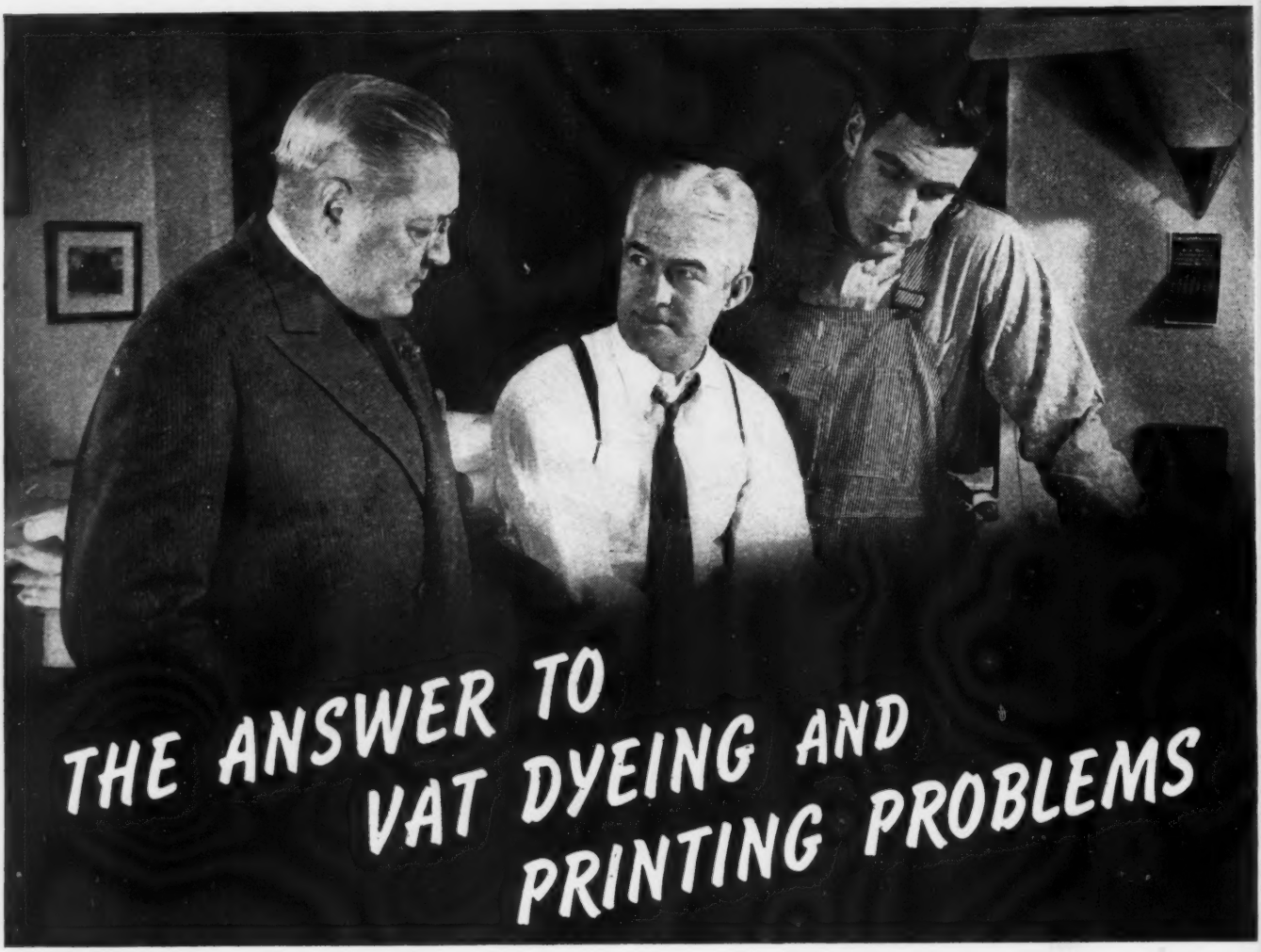
What to do and mistakes to avoid are told in the new book, "Designing with Magnesium", just published by American Magnesium. Your designers should have this book for a guide in changing over to magnesium. Copies will be sent free to the men you name in your organization.

Now that magnesium has become more abundant, many products will be redesigned in magnesium. At the same time, weight will be saved, while retaining high safety and reasonable costs. Our engineers will gladly assist you in this design work. Write American Magnesium Corporation, 1705 Gulf Building, Pittsburgh, Pennsylvania.

MAGNESIUM MAZLO PRODUCTS

AMERICAN MAGNESIUM CORPORATION

SUBSIDIARY OF ALUMINUM COMPANY OF AMERICA



● When Jacques Wolf and Company released APASOL last Spring, it had already achieved an impressive laboratory record as a low-cost, high-efficiency sulphonated oil.

Today, APASOL has been proved through use. Over and over again the verdict is: APASOL provides better penetration . . . more even dyeing . . . brighter colors.

The reason why APASOL assures level dyeing and excellent penetration is that it suspends the dyes in a finely divided form. It is suitable to all types of hard water and solutions of such salts as Lime, Common, Fine and Epsom.

APASOL can be used in pasting dyestuff, wetting out fibre before dyeing and directly in the dyebath. It protects cloth against the action of alkali.

For printing, APASOL is unexcelled. Added directly to the paste, it aids reduction, protects fibres, facilitates aging, increases solubility and brightens colors.

Let APASOL answer *your* dyeing and printing problems!

APASOL

22% COMBINED SO_3

Write today for generous free sample

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Chemicals **PASSAIC, N. J.**

WAREHOUSES: Providence, R. I., Philadelphia, Pa., Utica, N. Y., Chicago, Ill., Greenville, S. C., Chattanooga, Tenn., Knoxville, Tenn., Charlotte, N. C., Milwaukee, Wisc., Columbus, Ga.

A high service record for KODA*

Koda Diagonal has an enviable air record. It has crossed America on every flight of the Mainliner nce 1939 . . . proving so satisfactory in stewardess uniform blouses that United Air Lines has cently extended its use. Koda Diagonal blouses are now regulation for all of United's girl passenger gents and traffic representatives, as well.

tewardesses report that Koda Diagonal "washes, launders and wears beautifully." These and other dvantages, such as lightweight comfort and soil resistance, have combined to build its reputation as superior service weave. They are advantages that stem from the yarn with which every inch of his fabric is woven . . . Koda, Eastman acetate rayon.

Koda's unvarying strength makes for exceptional wearing qualities . . its sleekness and suppleness produce a smooth texture easy to clean. Koda's beauty is evidenced by many of today's leading fashion fabrics. or information about Koda, consult A. M. Tenney Associates, Inc., 0 East 40th Street, New York, sales representatives for the Tennessee astman Corporation, subsidiary of the Eastman Kodak Company.

*Eastman

ACETATE RAYON

Less spindle wear—Fewer ends down—

when the Gulf Lubrication Service Engineer is "in the picture"

Actual photo showing Gulf Lubrication Service Engineer G. P. King checking spindle lubrication in a prominent southern mill. Every day, throughout 30 states from Maine to New Mexico, Gulf Service Engineers are "in the picture" in scores of mills and plants—helping to step up production and reduce maintenance costs through improved lubrication.

It's an important plus value! Gulf Engineering Service, extended to users of Gulf quality lubricants, is contributing to increased production and dollar savings in hundreds of leading mills.

For textile machine performance and maintenance and power costs have a direct relationship to the effectiveness of lubrication. By recommending the proper application of the right oils and greases, Gulf Service Engineers help to lessen wear, reduce repairs, decrease end breakage, and lower power consumption.

Make sure *your* equipment is protected by scientific lubrication—keep a Gulf Service Engineer "in the picture."

Back the attack with more War Bonds

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Gulf Oil Corporation · Gulf Refining Company

Gulf Building, Pittsburgh, Pa.

NEW TRAINING FILM FOR MAINTENANCE WORKERS

TEACHES PROPER HANDLING OF VALVES, FITTINGS AND PIPE

TRAINING new workers in the fundamentals of piping maintenance becomes an easier task with this "Piping Pointers" sound film. It quickly familiarizes trainees with various types of valves and fittings and explains how to choose the most practical equipment for each use. It shows what to do when valves leak—how to handle many other maintenance problems—how to conserve time and critical materials. One complete section is devoted to the "*Language of Piping.*"

Manual Makes This Film More Valuable

Making this film doubly effective is the new 32-page Crane "Piping Pointers" manual which takes up in greater detail each subject covered in the film. This is the most complete manual of its kind ever compiled by Crane—it's full of valuable "know-how" data for every piping man. And all the information given in both film and manual is fully dependable because it's based on Crane's own 88-year experience as the world's leading maker of valves and fittings.

Act Now to See This Film in Your Plant. Requests for the "Piping Pointers" film are coming in fast. Assure a convenient early showing in your plant. Get in touch soon with your local Crane Branch that will arrange for use of the film and provide a supply of manuals. If you prefer, use the coupon below and we'll have the Crane Branch contact you.

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Put us down for the earliest possible showing of "Piping Pointers." Have the nearest Crane Branch get in touch with me.

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CRANE VALVES

CONES

WITH MORE SALES APPEAL

FROM CLEAN

MACHINES

WITH LESS MAINTENANCE

Your knitting mill customers will appreciate the better quality of Roto-Cones—the better yarn characteristics, the better package shape. Roto-Cones are identified by the open wind . . . the accelerated taper . . . the curved base . . . the shallow nose . . . and the smooth, un-cut yarn.

And *you* will notice the lower costs of operating Roto-Coners*—the cleanliness of the machine, the ease of maintenance, the elimination of greasing, the low repair costs. Despite the high winding speed (550 y.p.m. for knitting yarns), maintenance is estimated at less than ½ of 1%. At Drayton Mills, Spartanburg, S. C., for example, 400 spindles of Roto-Coner* installed in 1938 and 80 more in 1942 have required an average yearly repair part expense of only $.08 per spindle!

Universal Winding Company

PROVIDENCE BOSTON UTICA PHILADELPHIA

CHARLOTTE ATLANTA

One Reason for More Sales Appeal

The shallower cup at the nose means that the Roto-Cone is much less likely to be damaged by carelessness in shipping and handling. Another important quality feature is the absence of roll-cuts—because the Rotary Traverse (see right) is a one-piece drum revolving with the yarn, smoothing and rounding it just before it is wound onto the package.

One Reason for Less Maintenance

This single grooved roll—the Rotary Traverse—takes the place of the cams, guides and mechanical connections formerly required. There is nothing to wear, nothing to be replaced. Furthermore, almost all other moving parts in the Roto-Coner* are fully enclosed and automatically lubricated.

*Reg. U. S. Pat. Off.

43. 44. 3

ROTO-CONER LEESONA

Open-Wind Cones for Knitting

WARPING CONES · DYEING PACKAGES · PARALLEL TUBES FOR TWISTING

Reconversion *and* Contract Termination

AMERICAN industry is dedicated to an all-out effort to achieve victory, and its good faith in this direction is amply demonstrated by the results.

American industry also is dedicated to making democracy work effectively after the victory. And it is toward this objective that industry must prepare itself to guide the processes of demobilization and reconversion in order to minimize the dislocations and chaos which too easily can result from so tremendous a task.

We exercised foresight from the very beginning of the war mobilization program. Let us now exercise foresight in the approaching changeover from a wartime to a peacetime economy.

The first step in converting American industry from military to civilian production is the termination of contracts between the government procurement agencies and the producers. There are now in force war contracts amounting to tens upon tens of billions of dollars. As the demand for weapons of war decreases, the Armed Services will undertake to cancel contracts. With the emphasis shifting from weapons of one category to weapons of another category, many billion dollars worth of contracts already have been terminated. It is hoped that the experience now being gained in this work will provide the basis for effective and sound procedures when an avalanche of cancellations comes later.

Many complex problems involved in the termination of contracts will materially influence the success of the entire reconversion program. Once war demands fall off sufficiently to permit the renewal of civilian production, we will have to act with great speed if we are to avoid large-scale unemployment. Prompt financial settlements of contracts and the rapid clearance of plants are of immediate and great significance. In many cases the removal of equipment and raw materials will be more important than money payments. The allocation of raw material for civilian production will be of paramount importance.

Government agencies obviously must exercise great care in spending the people's money and in protecting the interest of the public against excessive payments. Unjust enrichment at the expense of the people will not be condoned nor will it reflect favorably upon management to present inflated claims. But long-delayed negotiations, which will retard the initiation of civilian production, likewise must be avoided.

The contracting agencies and the manufacturers both know that the greatest losses in the reconversion period will result from delays in getting peacetime production under way. The

greatest potential wastes lie in unemployment and in idle plants. The magnitude of such losses to the public can be far greater than the money spent in liberal settlements; to the manufacturer, these losses can represent vastly more than the extra funds that might result from interminable litigation. Policies must be firmly established *now* whereby the manufacturers, including subcontractors and suppliers, will receive substantial settlements immediately in order that ample funds be available for reconverting plants and accumulating necessary inventories of peacetime goods. Nor must we overlook the fact that the uncertainty of long drawn-out disputes will have a stifling effect on enterprise and that final settlements, therefore, should be made as promptly as possible.

Plants that are equipped largely with special wartime tools and machines and that are fully stocked with materials, components, and finished military products will not be able to undertake any substantial degree of conversion until this machinery and this inventory are removed. Advance arrangements are essential for the prompt clearance of great numbers of plants the country over. Adequate warehousing facilities must readily be available so that the changeover to civilian production will not be hampered.

As war demands decline, civilian output will be resumed; and while we recognize that the demands for munitions must vary as the strategy of the military leaders is changed, it is hoped that the Armed Services already have or soon will develop schedules of their continued needs under different strategic assumptions. If we know in advance the probable curtailment in war requirements we are in position to estimate the timing and the quantities of raw materials, the number of workers, and the industrial facilities which will be available for peacetime purposes. It will then be possible to integrate the lifting of restrictions on civilian production with the drop in war production.

Needless unemployment and idle plants will prevail if restrictions on the output of civilian goods are removed at a slower rate than available manpower, materials and plants permit. On the other hand, if the controls on civilian production are removed prematurely or too freely, then the production of military requirements will be hampered correspondingly. There will be great clamor and pressure for eliminating all restrictions as soon as any measurable quantity of materials and numbers of workers are freed from war work. It will react adversely on industry as well as on government if these pressures are heeded indiscriminately, thereby retarding the production of munitions for our boys who still will be fighting and dying at the front. The coordination of declining war demands with increasing civilian production probably is the most difficult and at the same time the most important task in our entire reconversion problem. Advance planning and sound judgment are essential.

An order of priority for initiating non-war or civilian production must be prepared beforehand. The schedule of resumption of peacetime production should be governed by the amounts of

materials, manpower and facilities that are available as well as by the relative needs or importance of different products. There will be strong competition for priority among the various kinds of consumer goods, equipment needed for reconversion, producers goods required for expansion and modernization, and export demands. Relative need obviously is the most compelling criterion. But because of the importance of expediting reconversion, earliest consideration is urged for the tools and fixtures and models which will expedite large-scale civilian production when adequate labor and materials are available. In any case, advance schedules will be needed to avoid a makeshift, piecemeal lifting of controls on the basis of who shouts the loudest.

Another difficult problem of the reconversion period will be to keep to a minimum the distortion of inter-industrial and intra-industrial relationships. Many varieties of consumers goods compete for the consumer dollar, and some industries will offer strong resistance if the green light is given first to industries whose products may thereby acquire a time advantage.

Even more difficult will be the matter of competition between companies producing the same products. Some manufacturers may find themselves tied up with continuing war contracts with restrictions on their peacetime products suddenly lifted and their competitors free to take advantage of the situation. The declining need for different kinds of war materiel will vary greatly, and some producers inevitably will be available for peacetime production considerably in advance of some of their competitors.

This raises the question of victory models or nucleus plants to eliminate competitive advantages among producers of identical products pending the time when all are on an equal footing again. Policies controlling this should take into account the degree or the extent of competitive advantage which reconversion might bring, and also upon the time interval during which these advantages will prevail. Such programs necessarily mean increased government control, hence they should be adopted only under the most pressing circumstances.

There is the important question of termination as between large and small plants. Fairness must be exercised, and undue advantage to either group must be avoided in extending opportunities to continue receiving profitable war orders or in getting back into civilian production. The problems of small manufacturers must not be neglected in this period. Likewise, any restraints on new ventures and on more vigorous competition must meticulously be avoided.

There also is the question of communities which have been greatly enlarged and others which actually have been brought into being by the war. It might be advisable to terminate contracts in these areas first in order that the workers might be encouraged to migrate elsewhere while employment prospects are most favorable. Also, if continued production of some armaments is contemplated after the war, it might be well to concentrate this production in communities which otherwise would be stranded.

If the process of terminating contracts is to be geared into meeting continued demands for munitions and also expediting reconversion, then the Armed Services must accept broad policy considerations as criteria for cancelling contracts. Procurement officers might be inclined to cancel contracts with all high cost producers first. Or they might be inclined to cancel small producers first so as to reduce the admmistrative burden. Then again, they might cancel the newer producers of specific products rather than the older, time-tried manufacturers.

These procurement criteria may all be highly desirable and efficient but other important considerations such as those mentioned above must be given proper attention. ***Demobilization cannot be a separate process from reconversion.*** They must be united. The termination of contracts is a demobilization task, but I am confident that the procurement agencies appreciate the importance of this operation in facilitating reconversion and that they will take full cognizance of the policies necessary for giving every assistance to initiating peacetime production.

I have not attempted to raise all the important policy questions in terminating contracts, nor do I propose specific solutions for each major problem. Rather it has been my purpose to indicate the complexities of the task which faces us and to urge that intelligent and sound plans be developed now while there is time. By so doing, we can avoid the dislocations and economic disorder which otherwise might characterize the reconversion period. The better we are prepared, the more rapid will be the resumption of full employment and good business after the war is won.

This job of changing America's industrial pattern from war to peace speedily and efficiently, is one which will tax the talents and knowledge of the ablest business men of the country. These men can, and I am sure that they will, attack this task with the same energy and determination that characterized their efforts in the period of mobilization for war.

Industry advisory committees were established to cooperate with governmental agencies in the great task of conversion to a full war economy. These committees are the means through which industry has the opportunity to play a major role in the solution of the problems of reconversion. It must assume that responsibility or accept the consequences in the form of enforced government control. Industry must take a renewed interest in these committees and make certain that our best minds and strongest men are available for the challenging job of conversion which we face now. It is a job that must be done well if we are to have a good start on the road to a greater democratic and free enterprise nation.

President, McGraw-Hill Publishing Company, Inc.

TEXTILE WORLD

EDWIN D. FOWLE, EDITOR

Unfavorable to War and Postwar

IT IS SOUND IN PRINCIPLE, in a war emergency, for Government and industry to sign contracts quickly for essential war products and decide later what the price should be, since in many cases neither buyer nor seller can correctly estimate production costs. But, if the renegotiation law favors only the buyer—if only he is in a good position to call for a favorable price change, if only he can decide that a proposed revision is acceptable, if there is no formula for calculating the correct price, and no arbitrator to be consulted—fairness is jeopardized and the term "renegotiation" (which implies a mutual agreement) is a misnomer.

The renegotiation law then becomes purely a cumbersome means of returning excess profits to the Government—a laudable objective, as any good citizen will agree—but one that can be reached much more simply and just as effectively through an intelligent tax program. To suggest this substitution of method is not to condone the war profiteers but to offer an improvement in the manner of dealing with them.

It should be noted, in retrospect, that the renegotiation provisions were from the very start a deterring influence on the efficiency of war production, because they as much as said to the manufacturer, "If you cut your costs, my boy, we shall probably take the savings away from you." It was undoubtedly the hope that this would not prove to be so, plus the patriotic fervor engendered by Pearl Harbor, and plus the long-cultivated instinct of the modern manufacturer to improve his methods constantly, that minimized the effect of this influence and permitted American industry to attain fully its amazing war record.

BUT NOW WE HAVE HAD A CHANCE to catch our breath. We can look at things a little more rationally, and the actual functioning of the law has become tangible. It is high time to think of its effect on what remains of the war effort and on the big reconversion job that is coming.

If we must keep the law, it would be best, if it were possible, to develop a formula for price calculation which would be fair to both Government and industry and which would not omit an incentive for efficiency. The right formula would probably have to take the costs of an efficient plant producing the identical article before or at the time the contract was signed, include a fixed fee for base profit, and split subsequent savings between Government and manufacturer in some reasonable proportion, with due allowance for the economizing effect of large orders and mass production. The difficulty, of course, would be to find and analyze an efficient plant that had made the identical product. Indeed, in numerous cases it would be impossible, because certain war products are definitely something new under the sun.

EVEN A DISINTERESTED ARBITRATOR should make some such calculation, but he would have to make the same hunt for a sample plant without any better chances of success. Furthermore, knowledge that an arbitrator would have the final say would continue to leave the manufacturer with a gnawing uncertainty as to how much he would eventually have to turn back.

It is this uncertainty that threatens injury to our postwar reconversion plans. It is essential that manufacturers know or can calculate immediately at the cessation of hostilities how much money they have available to invest in postwar production.

Consideration of these effects of the renegotiation provisions on American industry as a whole makes clear that the request recently put to the Senate by the textile industry for the exemption of "standard" products, as reported in this issue, was modest and reasonable.

Edwin D. Fowle

50 YEARS OF TEXTILE-MILL

By WINN W. CHASE

HIGHLIGHTS: Electric Generators and Motors at Columbia Mills Put Into Operation in 1894 — Contrast Between Original Installation and Present Electrical Equipment — Other Applications of Electricity in the Textile Industry — Preview of Postwar Developments in Electrical and Electronic Equipment.

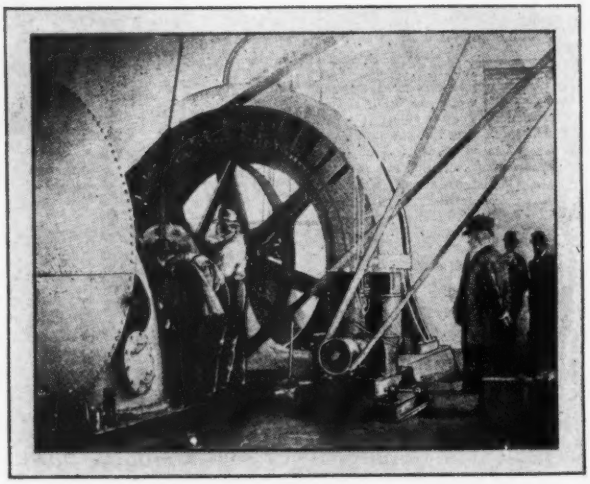


Fig. 1. One of original turbines in power house.

HISTORY was made one spring day in 1894 when the switch was thrown in the new power plant of Columbia (S.C.) Mills and the motors in the mill began to hum. Previously no textile mill had been completely operated by electricity. In fact, no electric motor had ever been used in the manufacturing department of a cotton mill. Today with 744,529 motors installed in textile mills, the textile industry is said to be the most completely electrified of all American manufacturing industries.

To depict the progress which has been made during the last 50 years in electrification of textile mills, the original installation of generators and motors and the modern electrical equipment now employed at Columbia Mills are described and illustrated below, together with some of the other major developments in electrical equipment which have found application in the textile industry. To round out the picture, a brief preview is presented of postwar applications of electricity and electronics in manufacture and finishing of textiles.

It is interesting to note that much of the information on the original installation at Columbia Mills is taken from an article which appeared in the June, 1895, issue of TEXTILE WORLD. Earle Mauldin, southern editor of TEXTILE WORLD, assisted the author in gathering the data on the electrical equipment now employed at Columbia. Descriptions and illustrations of modern electrical and electronic equipment other than that at Columbia were obtained from the manufacturers, various textile mills, and other sources.

Columbia Mills—1894

HAD IT NOT BEEN for the courage and vision of a mill manager, a consulting engineer, a salesman, and the technical director of an electrical company, electrification of the textile industry might have been delayed for many years. These men were Charles K. Oliver, agent for Columbia Mills; Stephen Greene, of Lockwood, Greene & Co.; Sidney B. Paine, salesman for the newly formed General Electric Co.; and E. W. Rice, Jr., head technical official of G.E.

It was the year 1893. The site for Columbia Mills had been selected, the plans for the mill completed, the layout of the machinery settled upon. But in choosing the mill site, the officials of the company had overlooked certain conditions which made it virtually impossible to drive the mill by a waterwheel. Accordingly, Mr. Greene, who was in charge of the engineering, suggested that electric motors be used. Mr. Oliver was favorably inclined and inquired where he could see such an installation. Told that no such installation existed, he asked Mr. Greene whether he was prepared "to chance the operation of a million-dollar cotton mill upon a theory." Mr. Greene replied that he was, and Mr. Oliver decided that he too would take the chance.

Salesmen from three electrical companies submitted proposals, Mr. Paine being the only one to advocate alternating-current equipment. Finally Mr. Paine persuaded Mr. Greene that alternating-current equipment, despite its higher initial cost, was the only feasible type to install. As a result, an order was placed with General Electric Co., in August, 1893, for two 500-kw., 3-phase, a-c. generators; fourteen 65-hp. induction motors; and three smaller motors.

Now came the struggle to fulfill the contract. Thus far the largest a-c. motors built by G.E. were for slightly more than 10 hp., and the executive committee of G.E. thought the venture was too radical and too hazardous. However, Mr. Rice told the committee that the project was perfectly feasible, and designing of the motors fell upon Horace F. Parshall, Dr. Louis Bell, and Charles P. Steinmetz. Parshall was willing to guarantee that the motors would work. Bell, when he found that they were to be suspended upside down from the ceiling demurred, stating: "This is the last application of an inverted motor we'll ever make." What Steinmetz said is not recorded. At any rate, the contract was accepted, and the motors were built, and in due time were shipped to Columbia.

A photograph taken in 1894 of the interior of the Columbia Mills power house showing one of the generators is reproduced in Fig. 1. The power house was a brick structure 112 x 38 ft. The generators were driven by two

pairs of 48-in. cylinder gate Victor turbines on horizontal shafts, coupled at the center, and carrying on their ends the armatures of the generators. Two Edison continuous-current exciters were used to excite the magnets of the generators. The switchboard was located in the center of the power house. Conductors from the switchboard led underground for a distance of 800 ft. to the mill building.

As all floor space at Columbia had been appropriated for the machinery, it was necessary to suspend the motors upside down from the ceiling. Each motor was controlled by a separate switch and protected by its own cutout. A view in the picker room is shown in Fig. 2. Here the motors were coupled directly to the lineshafting, thus obviating all belts and pulleys between the shaft and the motor. In other departments the motors were belted directly to small countershafts, thereby rendering large shafing unnecessary. An interesting feature of the installation was that for the first time two pulleys were placed on each end of a motor, and from each pair of pulleys the belts drove in opposite directions. This arrangement decreased the number of steps in the transmission.

By means of transformers which received their current from the same wires which operated the motors, 800 55-watt, carbon-filament incandescent lamps were operated in the mill.

In May, 1925, the original electric equipment was still in operation and only seven stators had been rewound. A year later Columbia decided to shut down the generating plant (shown in left foreground of Fig. 3) and use purchased power.

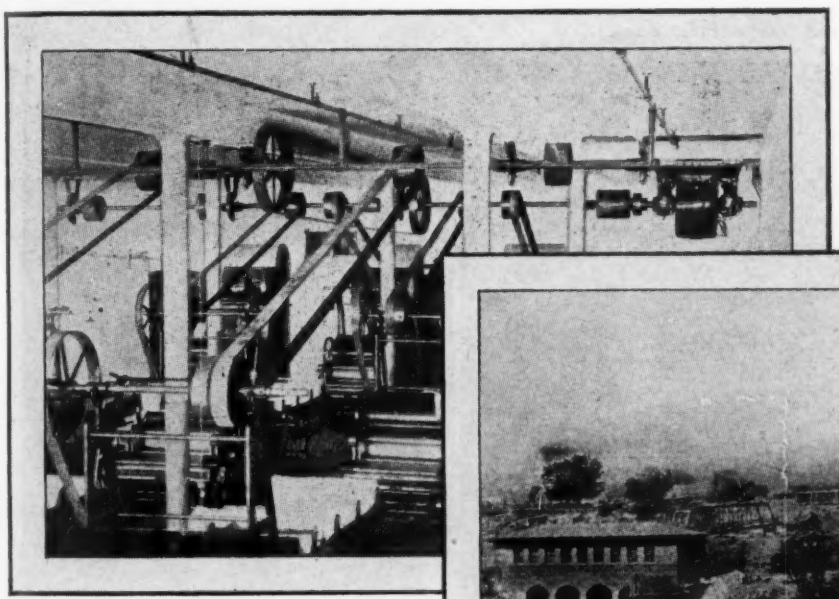


Fig. 2. Picker room at Columbia showing motor suspended from the ceiling.

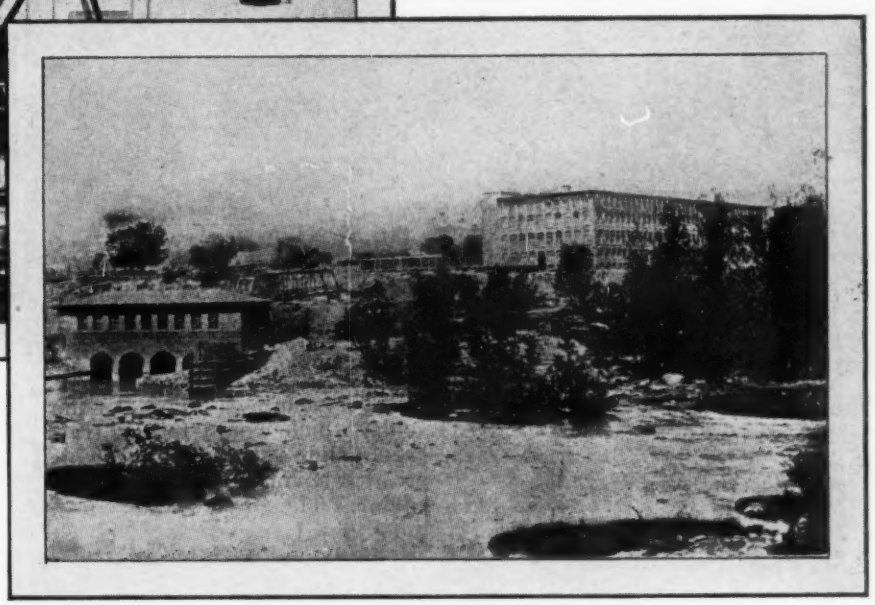


Fig. 3. Columbia Mills in 1894; power house is in left foreground.

Columbia Mills—1944

TODAY, AFTER 50 YEARS, Columbia Mills looks much younger than its age. This is due to the large-scale modernization program which started in 1927 and has continued since then under the general supervision of L. C. Smith, who became agent the following year.

The contrast between the original electrical equipment and some of the modern equipment now in place exemplifies to a considerable degree the progress which has been made during the last half century in electrification of the textile industry.

Power for the mill is purchased from the South Carolina Electric & Gas Co. Before entering the mill it is stepped down from 13,000 to 575 volts by the three 1600 k.v.a. transformers shown in the cover picture. Transformers for the lighting system are located on the outside walls of the building at points near the distribution centers; they are 575/220/110-volt.

The present switchboard is shown in Fig. 4. The incoming panel has a frequency meter, kw.-hr. meter, voltmeter, ammeter; ground detector; and recording wattmeter. The 12 branch-circuit panels have each, one circuit breaker, and one ammeter. The switchboard for the elevator and auxiliary circuits is located in a separate building so that power in these circuits is not interferred with in case of work on the main switchboard. Located in the main switchboard room

Fig. 4. Switchboard has incoming panel and 12 branch-circuit panels.

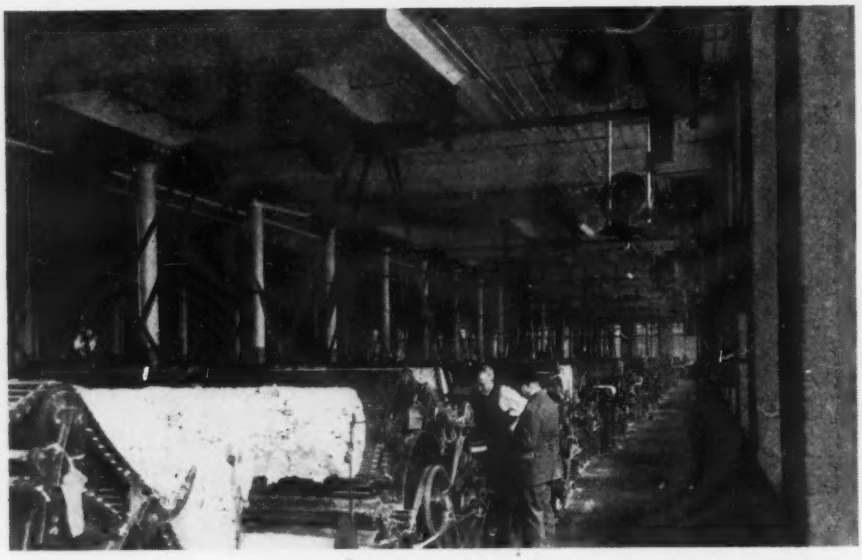


Fig. 5. Drives in card room are unusual. The author and Earle Mauldin (in shirt-sleeves) are examining one of the cards.

Fig. 6. Some of the 70 G.E. 15-hp. motors in the twister room.

is a starting compensator for motor testing. The distribution system is of the three-wire type, and, in part, is run in conduit.

Machine drives at Columbia are of various types, including lineshaft, group, and individual motor drive. An unusual arrangement is that employed in the card room; here each group of 18 cards and 14 deliveries of drawing is driven through a lineshaft and belts from a motor suspended from the ceiling as shown in Fig. 5.

At Columbia most of the spinning frames, all twisters, some looms, and several other types of machines are individually driven. A view in the twister room showing some of the 70 G.E., 15-hp. motors is given in Fig. 6; note also the starting switch, and motor controls at each frame.

Another interesting drive is that for the beamers shown in Fig. 7. Each of six beamers is driven by a 15-hp. motor mounted on the ceiling through a mechanical variable-speed drive to maintain a constant yarn speed regardless of the amount of yarn on the beam.

A view in one of the weave rooms, where many of the looms are driven by individual motors is shown in Fig. 8. A few years ago, when fluorescent lighting was first introduced to the textile industry, Columbia began to modernize its lighting system. Today G.E. and Sylvania Electric fluorescent lighting equipment is installed throughout the manufacturing departments and offices. The effectiveness of this system of lighting is illustrated in the view of the weave room shown in Fig. 8. Another recent innovation in lighting is in the cotton classing room, shown in Fig. 9, where a Macbeth Daylighting unit is installed.

Electricity finds a number of applications at Columbia aside from those cited above. For example, elevators, trucks, water coolers, and laboratory equipment are operated by electricity. Electric stop motions are employed on looms, and automatic knock-off controls on twister frames. Electrically operated signal systems have been installed in various departments. Still another application is for arc-welding, as shown in Fig. 10.

The largest motor in the mill is a 100-hp. motor, shown in Fig. 11, which is installed in one of the weave rooms for driving a number of looms.

It is noteworthy that Columbia not only has the distinction of being the first textile mill to be completely electrified, but also has kept alert to the progress in electrification during the last 50 years.

(Continued on page 60)

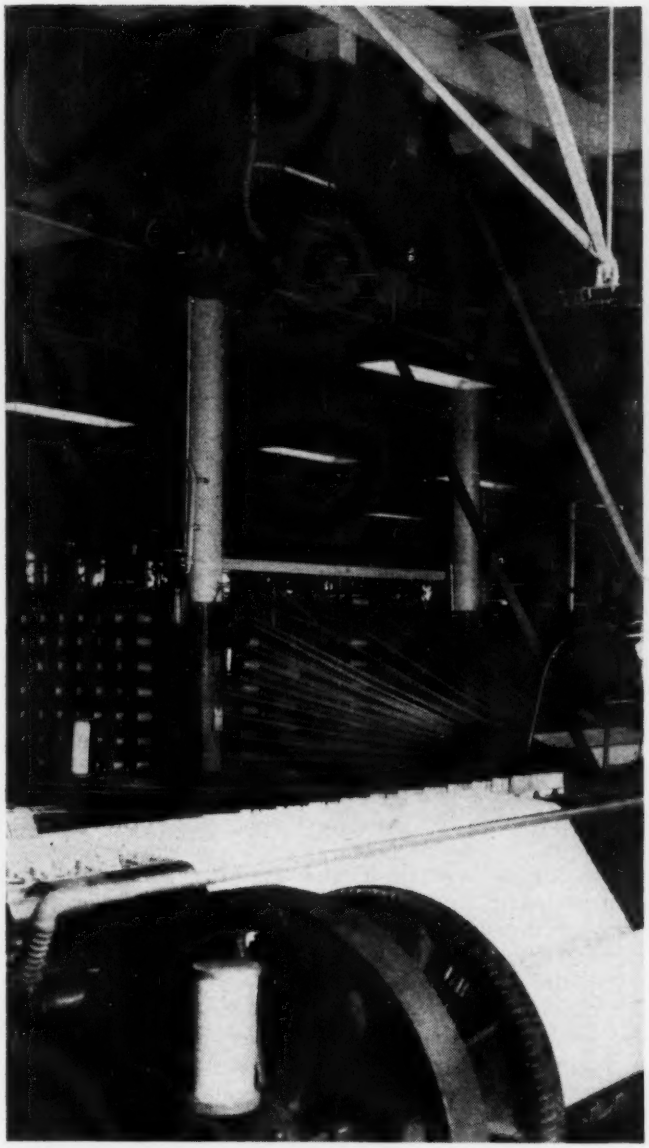


Fig. 7. One of six beamers each of which is driven by a 15-hp. motor through a mechanical variable-speed drive.

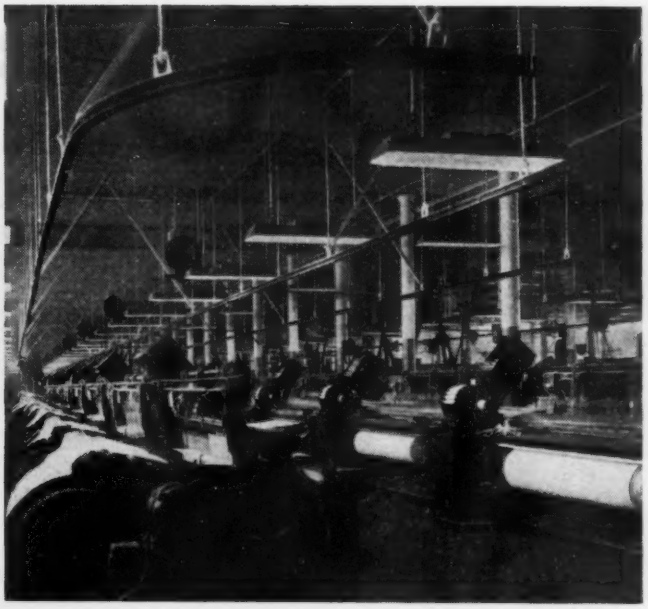


Fig. 8. View in one of weave rooms; note fluorescent lighting fixtures. G. E. and Sylvania Electric fluorescent lighting equipment is installed throughout the mill and offices.

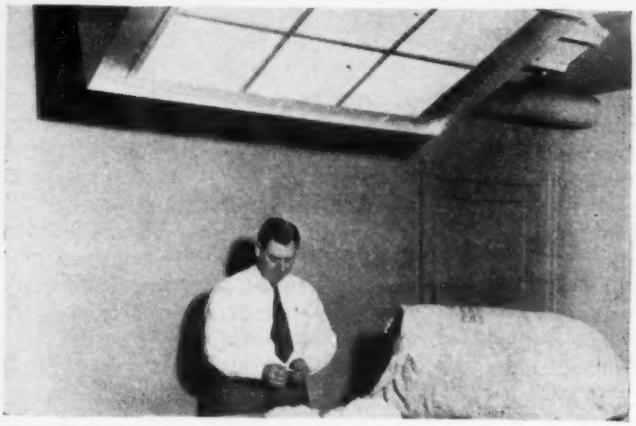


Fig. 9. Cotton classing room at Columbia has Macbeth Daylighting unit.

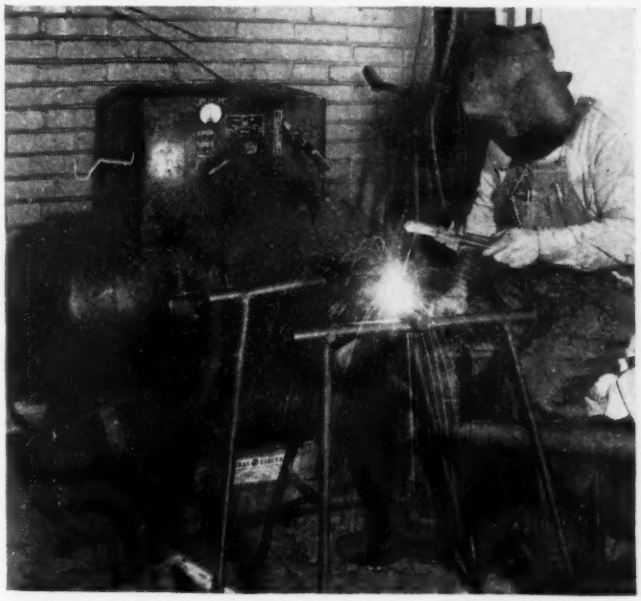


Fig. 10. Electric arc welder in machine shop at Columbia.

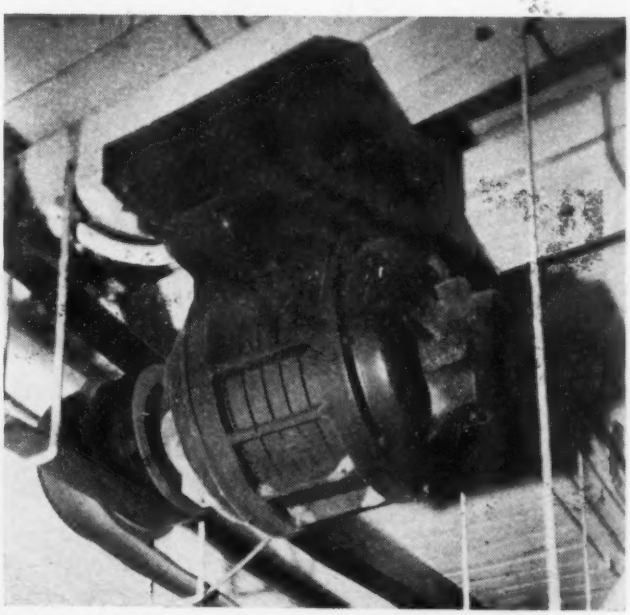


Fig. 11. Largest motor in the mill is a 100-hp. motor.

All photos of present equipment at Columbia by Charles Old

Electrical and Electronic Equipment

IN RECENT YEARS many new and improved types of electrical and electronic equipment have been introduced to the textile industry. Some of these have already found widespread use; some are so new that as yet comparatively few installations have been made. To show more fully the progress in electrification, several of the major developments other than those now employed by Columbia are considered below. No attempt has been made to list each and every electrical device which has found application in the textile industry; rather the purpose is to indicate the directions in which advances have occurred.

A recent trend in electric power generation has been the installation in a number of textile mills of diesel-operated generators, particularly as a source of supplementary or emergency power; such an installation is shown in Fig. 12. Even more recent is the development of electronic rectifiers, which should find application in the textile industry for converting a-c. power to d-c. power and for changing frequency—for example, from 40 to 60 cycles.

Particularly applicable in new plants and in additions to present mills are unit substations, located near the load centers; power is distributed to these substations at high voltage, where it is stepped down to utilization voltage and distributed to the loads via short secondary feeders. Another noteworthy development is the packaged type of switchboard, which is assembled by the manufacturer and shipped complete. Bus-bar type of distribution is advantageous when changes in location of branch lines or taps are made. During the last few years many mills have installed capacitors to correct low power factor.

In the field of power transmission notable progress has been made. One important trend has been the introduction of special motors and motor drives for a variety of textile operations. Thus, there are now available lint-proof, splash-proof, and explosion-proof motors; gear motors; and special motors for spinning frames, twisters, looms, and other machines. One of these special motors is shown in Fig. 13. An outgrowth of the trend toward use of individual motor drives is the tendency, which became apparent shortly before the outbreak of the war, to drive each section of certain machines, such as multi-compartment washers, with its own motor.

For driving finishing ranges and other types of equipment where frequent changes in speed are necessary, a variety of adjustable-speed motors have been introduced in the last few years. Whereas d-c. motors have been employed extensively in the past, most of the newer developments utilize a-c. current. Thus, several drives have been developed to permit rapid changes of speed on full-fashioned hosiery machines, the best-known, perhaps, being an adjustable-speed, brush-shifting motor shown in Fig. 14. More recently several other adjustable-speed drives have been introduced. Typical of these is an electronic drive consisting of a power transformer, a cabinet housing electronic tubes and current-limiting and speed regulating controls, a control station with potentiometer to vary the voltage supplied to the armature and field circuits, and a shunt-wound d-c. motor. Another adjustable-speed drive applied to a cloth slitting machine is shown in Fig. 15. It consists essentially of a speed-control unit, adjustable-speed motor, speed adjustor, and start-stop pushbutton.

A recent development particularly applicable in mills having steam available together with a process requirement for low-pressure steam is a combined electric and mechanical drive from a single turbine, such as is shown in Fig. 16, which is located near the finishing range or other driven machine. Another drive of unique design consists of an all-metal mechanical variable-speed device built integrally with a constant-speed a-c. motor.

Motor controls have been improved and simplified of late—a typical set-up for spinning-frame motors consisting of across-the-line starters and fuses, or circuit breakers inclosed in a case which is mounted on one end of the frame. Time-delay relays and mercury limit switches are comparatively recent innovations. Much of the indicating, recording, and control equipment found in the modern textile mill is of the electric type. Electrically operated valves control the flow of processing solutions. Portable instruments for checking the condition and efficiency of motors, controls, and other electric equipment are rapidly gaining in favor. In the textile-mill laboratory electrical devices of various types are employed in testing, process control, and research.

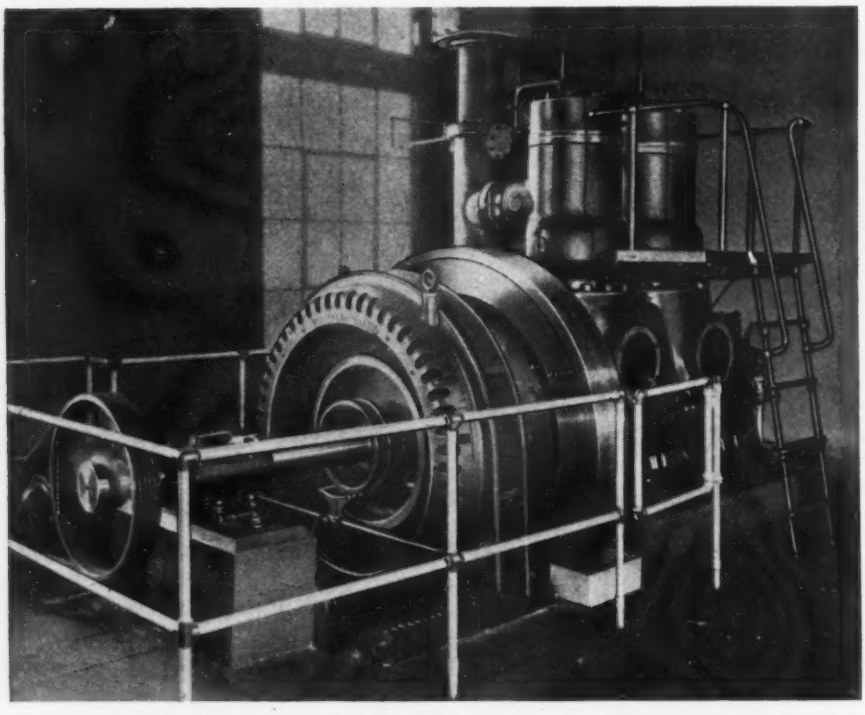


Fig. 12. Fairbanks & Morse diesel-powered generator installed in a hosiery mill.

ELECTRONIC EQUIPMENT. To the layman, "electronics" is a magical word. In the textile industry electronic devices already are proving ready servants and give promise of performing many other tasks. The essential part of any electronic device is an electronic tube, of which there are two basic types—one type gets an impulse from electric voltage produced elec-

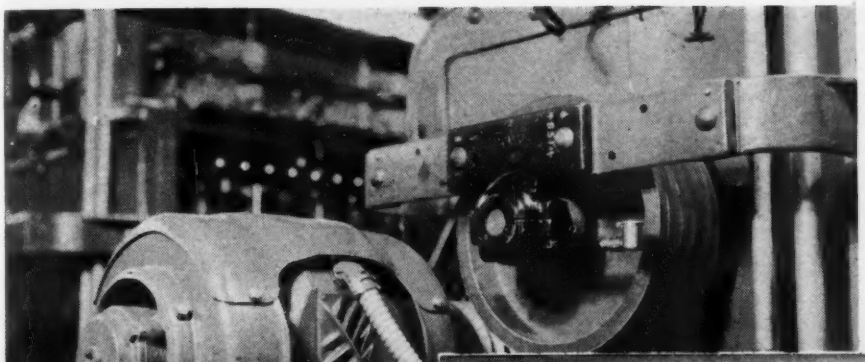
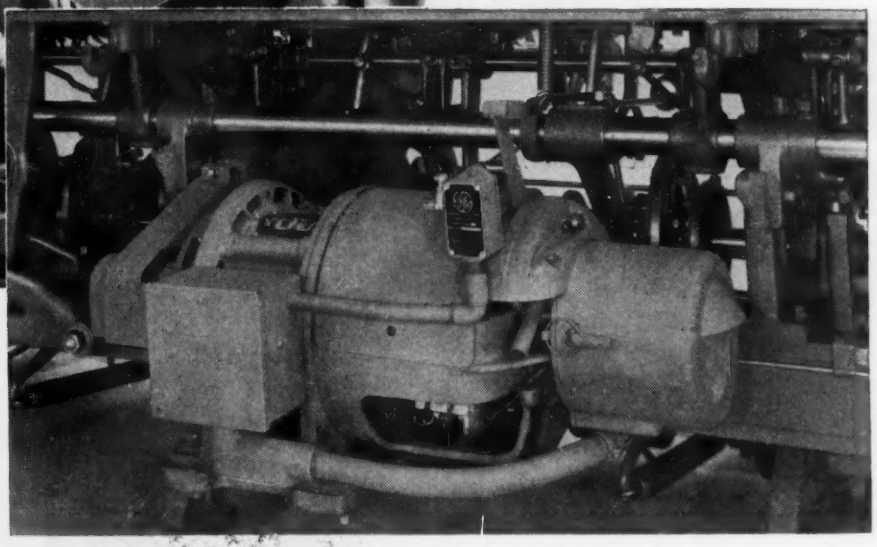


Fig. 13. (left) Typical of special motors is this one developed by Allis-Chalmers for cotton-mill applications. Other special motors include loom motors and splashproof and explosion-proof motors.

Fig. 14. (below) BTA knitting machine motor developed by G.E., utilizes a-c. current and permits rapid changes in speed of the machine.



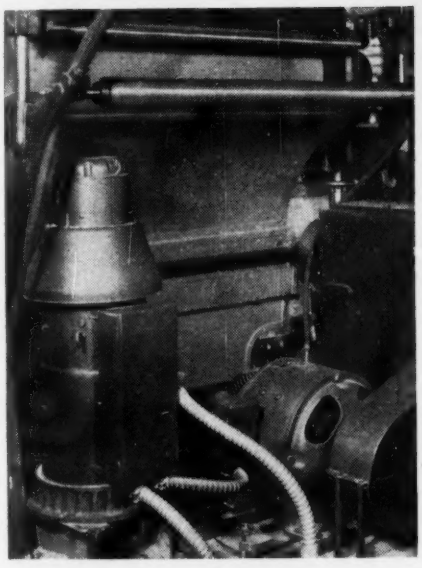


Fig. 15. Reliance all-electric, adjustable-speed drive.

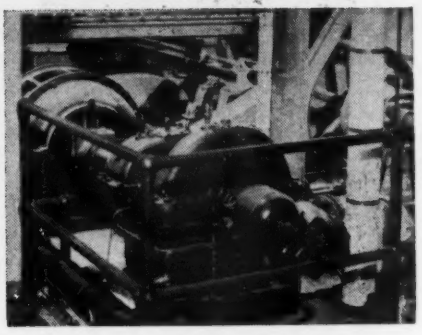


Fig. 16. G.E. turbine-electric drive installed in a finishing plant.

trically, mechanically, or chemically; and the other type gets its impulse from a beam of light. The value of electronic devices lies in their ability to detect, measure, control, and amplify these impulses and to act as a rectifier of electric current.

Among textile-mill applications for electronic equipment not mentioned previously are for providing constant tension on yarn or cloth, maintaining uniform cloth widths, removing skew and straightening filling in piece goods, detecting errors or flaws in printing fabrics, preventing damage in shearing, and cutting fabrics to predetermined lengths. Electronic instruments are employed for such purposes as controlling amount of moisture in yarns and fabrics, determining speed of spindles and other moving parts of machinery, and for measuring and recording colors. Electronic tubes actuate safety devices, automatic door-openers, stop motions, and alarm systems. Likewise, electronic tubes are employed in intra-plant communications systems, radios, etc. Electron microscopes and X-ray equipment are proving valuable in textile research. Only a few months old is an electronic sewing machine which utilizes radio-frequency current, instead of needle and thread, to join plastic materials.

Electronics invaded the field of air conditioning a few years ago with the introduction of electrostatic precipitators which remove dust, soot, and other foreign material from the air. Static eliminators embodying electronic tubes have found application for some time in the textile industry. Several types of electronic equipment are illustrated in Figs. 17 to 25.

Textile men are well aware of the recent improvements in lighting equipment for general illumination, grading, color matching, and inspection. Now they are beginning to take advantage of the possibilities of infra-red lamps for drying yarns and fabrics. A bank of infra-red lamps applied to a sanforizing machine is illustrated in Fig. 26. Ultra-violet equipment is used extensively for testing fastness of dyes, and to a lesser degree for other purposes. Several companies are investigating the possibilities of a lamp for destroying bacteria and fungi.

Electric heating plays an important part in rayon throwing and certain other textile operations. In soaking of rayon, for example, immersion-type electric heating units are employed for heating the soaking solutions both in the tank and in the soaking machine. Likewise electrically heated conditioning ovens are used for setting the twist in the yarn. Electrically heated drying forms (Fig. 27) have been utilized for some time in the hosiery industry. In finishing plants, electric singers and electrically heated dry cans find limited application. Electrically heated shoes are an essen-

Fig. 17. Westinghouse Precipitron removes dust and soot.

Fig. 18. G. E. photoelectric control for operation of door.

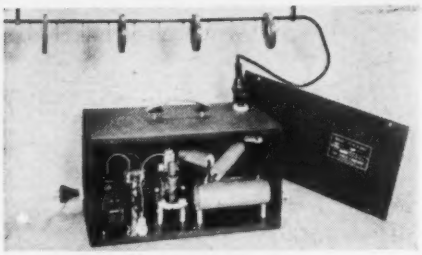


Fig. 19. Simco static eliminator embodying an electronic tube.

SEVERAL TYPES OF ELECTRONIC EQUIPMENT EMPLOYED IN TEXTILE INDUSTRY

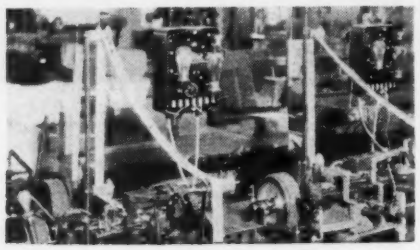


Fig. 20. Label-cutting machine with photoelectric control.

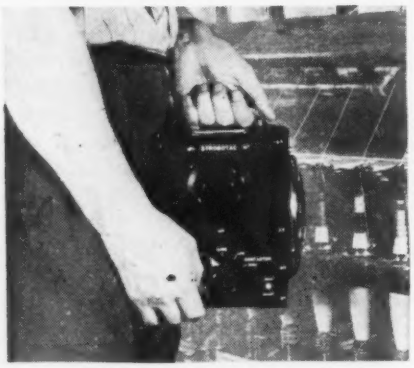


Fig. 21. General Radio Strobotac being employed for measuring spindle speed.

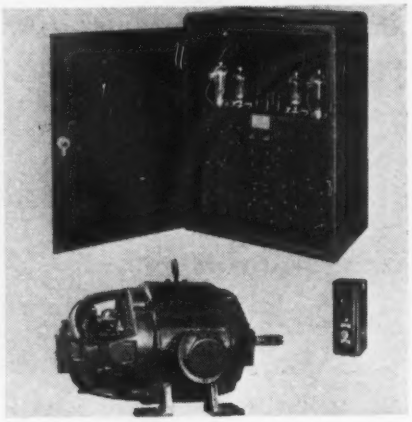


Fig. 22. Westinghouse electronic adjustable-speed drive.

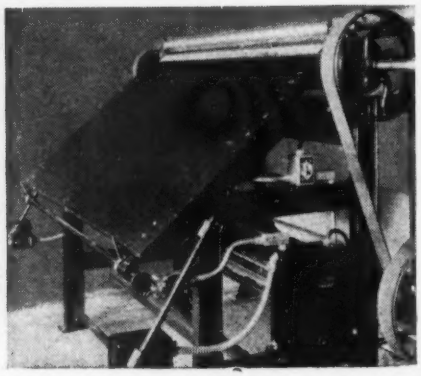


Fig. 23. Curtis & Marble inspecting machine with photoelectric control.

Fig. 24. Communication system utilizes electronic equipment.

Fig. 25. RCA electronic sewing machine is a new device.

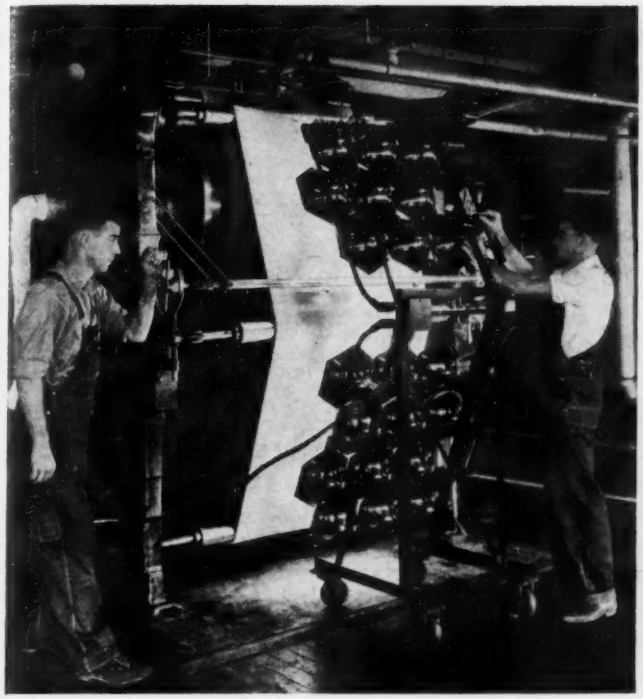


Fig. 26. Fostoria infra-red drying unit on Sanforizing machine.

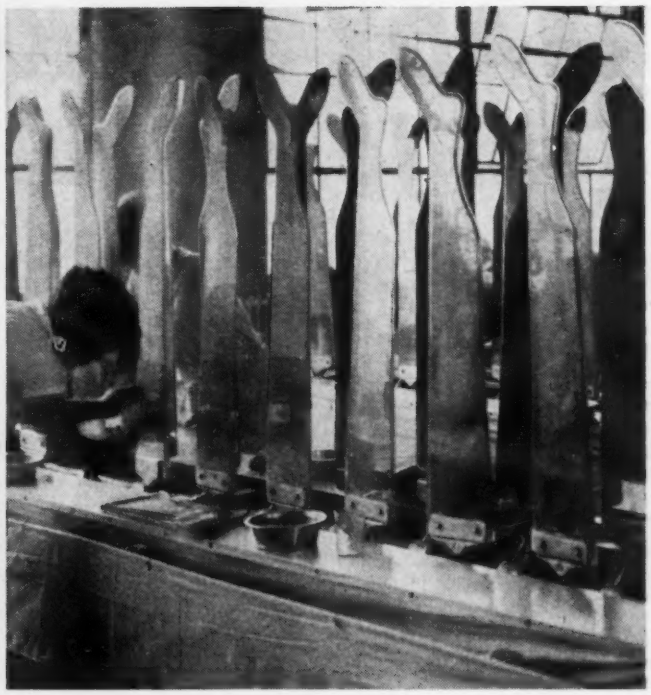


Fig. 27. Electrically heated hosiery drying forms.

tial feature of the latest types of Sanforizing machines. Unit heaters, operated by electricity, are available.

An interesting development, the progress of which was halted temporarily by the war, is a method of producing pile fabrics by applying cut fibers to a suitable backing material by an electrostatic process. Another application of electricity is the use of electromagnetic separators for removing miscellaneous bits of iron from fibers before they are passed to garnetting machines or cards. Electric selvage guiders—consisting of starting and limit switches, feeler switches, magnetic reversing switches, and fractional horsepower motors—are employed for feeding fabrics to tenters and other finishing equipment. Electric compensators for synchronizing cloth speeds are a part of many finishing ranges. Electrolytic cells for producing chlorine bleaching solutions have been installed in several mills.

Telephones, teletype and telautograph systems, time clocks, watchmen's systems all depend on electricity. In mill offices, electric typewriters and accounting machines are coming into use. In mill restaurants and cafeterias electric stoves are gaining favor. Throughout the mill itself electric hoists and electrically operated conveyor systems are conserving manpower.

Postwar Possibilities

Progress made in electrification of the textile industry during the last half-century may very possibly be eclipsed by the further advances which will take place during the next 50 years. It is certain, at any rate, that in the immediate postwar era many new and improved types of electrical and electronic equipment will be made available.

Improved motors and drives for textile machinery are among the first of the innovations which can be expected. This is true particularly of electronic adjustable-speed drives for individual machines, groups, or ranges to obtain constant linear yarn speed or cloth speed at uniform tension.

Lighting systems for textile mills will be further improved as a result of more efficient lamps, tubes, and fixtures. Fluorescent tubes bent to circular or other shapes will, for some applications, replace the conventional straight tubes. Uniform illumination throughout the working day will be maintained automatically by means of photoelectric devices to control the lighting equipment.

Infra-red drying units which require less space than the banks of lamps now needed undoubtedly will make their appearance. Such units may be employed for room heating, as well as drying. Experiments now being made in drying of rayon cakes with high-frequency electricity may well lead to the development of dielectric equipment for drying yarn in packages and on beams, and drying cloth on rolls.

Another of the many functions which electronic devices may be performing in the not too distant future is the cutting of jacquard cards. To eliminate vibration of textile machinery and to eliminate noise in textile mills, radionic apparatus may be employed to set up counteracting waves. Somewhat further away, perhaps, but a distinct possibility, is the use of ozone-producing lamps for bleaching.

It is an open secret that an electrical company and two textile machinery manufacturers are interested in a machine which controls fibers electrically.

Finally, mention will be made of three developments still in the laboratory stage. First is a method for the electromagnetic repulsion of metals, which sometime may solve the problem of wear and burning by friction of travelers and other fast-moving parts. Second, is the conversion of solar energy into electric power. Third, is the transmission of electric power without wires. These developments, together with those cited above which are nearer commercial utilization, are indications of what the future holds in store in the way of further electrification of the textile industry.

READY RECKONERS Speed Textile Calculations

HIGHLIGHTS: Use of Tables Based on Constants Saves Time in Making Calculations — Methods for Developing and Using Such Tables Described

To many of our readers, Ernest Whitworth needs no introduction. He is the author of the book "Practical Cotton Calculations," which, unfortunately, is now out of print. At one time he taught designing and cloth analysis in a textile school, was then designer in a worsted mill, and later entered the cost-accounting and consultation field with a well-known firm of textile engineers. For some years he has been connected with one of the largest fancy goods mills in the country, where he has had experience with production and cost problems, inventories, job analyses, time studies, rate setting, and similar work. In this and subsequent articles, Mr. Whitworth will present numerous short-cut methods which are designed to save time in making textile calculations. He has offered in this series to cover any specific calculations requested by our readers. Such requests should be addressed to Technical Editor, TEXTILE WORLD, 330 West 42nd Street, New York 18, N. Y.

By
ERNEST WHITWORTH

BASIC READY RECKONERS are real time savers, speeding up textile calculations. Every mill man who has to deal with figures will find it worth while, therefore, to familiarize himself with the development and use of ready reckoners. Basic ready reckoners are tables based on constant or semi-constant figures which occur in textile calculations. Once an overseer or clerk understands the principle on which the ready reckoners are based, he can draw up tables for himself, using such figures as pertain specifically to the calculations he ordinarily makes in his daily work.

Among the calculations which have to be performed frequently are those for determining the yards per pound of yarn of various counts or numbers. Therefore, this first article will discuss the development of ready reckoners for simplifying such calculations. Subsequent articles will deal with calculations for overseers, departmental calculations, production and cost calculations, etc.

In Table I are given the basic ready reckoners used for calculating the yards per pound of any count of yarn as numbered by the principal systems based on length per unit of weight where the higher numbers indicate finer yarns and more yards per pound. In the left-hand column of the chart are listed counts of 1 through 9; in the other columns are given the yards of yarn per pound for counts of 1 through 9 according to various yarn-numbering systems. Use of numerals 1 to 9 plus 0 (zero) and decimal points are sufficient for all yarn numbers. That is, if the numeral 1 is moved one space to the left and a zero placed in the unit column, the number becomes 10; or, if a decimal point is placed before the numeral 1, the value is changed to 1/10. Calculations are made simply by adding the figures in the table after moving them to the left or right as required to bring unit values in line.

Table I. Basic ready reckoner for determining yards per pound of any count of yarn as numbered by the principal systems.

System	Dram	Cut	Metric	Worsted	Cotton	Typp	Run
Used principally for	Woolen	Woolen, linen, silk noil		Worsted	Cotton, spun silk	Suggested universal system	Woolen
Yards per hank	256	300	496	560	840	1,000	1,600
Counts	Yards of Yarn per Pound						
1	256	300	496	560	840	1,000	1,600
2	512	600	992	1,120	1,680	2,000	3,200
3	768	900	1,488	1,680	2,520	3,000	4,800
4	1,024	1,200	1,984	2,240	3,360	4,000	6,400
5	1,280	1,500	2,480	2,800	4,200	5,000	8,000
6	1,536	1,800	2,976	3,360	5,040	6,000	9,600
7	1,792	2,100	3,472	3,920	5,880	7,000	11,200
8	2,048	2,400	3,968	4,480	6,720	8,000	12,800
9	2,304	2,700	4,464	5,040	7,560	9,000	14,400

Table II. Multipliers or conversion factors to give equivalent counts of yarn in various numbering systems.

Known System	Dram	Cut	Metric	Worsted	Cotton	Typp	Run
Dram	1	.853	.51612	.45714	.30477	.256	.16000
Cut	1.17187	1	.60483	.53571	.35715	.300	.18750
Metric	1.93752	1.65333	1	.88571	.59049	.496	.31000
Worsted	2.18753	1.86667	1.12902	1	.66667	.560	.35000
Cotton	3.28129	2.80000	1.69352	1.50000	1	.840	.52500
Typp	3.90630	3.33333	2.01610	1.78570	1.19050	1	.62500
Run	6.25000	5.33333	3.22576	2.85712	1.90480	1.600	1

Example: How many yards are contained in 1 lb. of 24/1s cotton yarn?

Using the ready reckoners given in Table I, the calculation by addition is as follows:

Count	Yards
4	3360
20	1680
24	20,160 (Ans.)

In practice, one would put on paper only the following:

3360
1680
20,160

Actually, use of ready reckoners will save very little time in making simple calculations of this nature. In fact, use of a yarn-number conversion table may be preferable. However, the example given above demonstrates the principles involved in developing and using ready reckoners.

CONVERSION OF YARN COUNTS. Use of many different yarn-numbering systems in the textile industry necessitates the conversion of yarn counts from one system to another to bring them to an equivalent basis. This is true, for instance, when two or more different types of yarn are employed in making a fabric. It is when a combination of two or more systems is being dealt with that real savings in time can be effected by use of ready reckoners.

In Table II are given the conversion factors or multipliers for various numbering systems; this table is employed for building up tables of equivalent yarn counts in various systems. Table III is such a table carried out to 3 decimal places. Anyone using Continental system can expand tables to include equivalents, which are one-half those for metric system. The degree of accuracy desired will determine how many decimal places should be used. The way in which Table III is employed is illustrated by this example:

Example: What is equivalent in worsted system of a 22-cut woolen yarn?

Using the ready reckoners in Table III, the conversion involves addition only, as follows:

Cut	Worsted
2	1.071
20	10.710
22	11.781 (Ans.)

In practice, one would put on paper only the following:

1.071
10.710
11.781

To facilitate the use of basic ready reckoners, one should draw off onto 3 x 5 in. cards, which can be handled easily, the figures needed frequently. Such cards can be filed in a logical order where readily available.

Table III. Basic ready reckoner for determining equivalent counts of yarn as numbered by various systems.

Known Counts in Dram System

Equivalent counts in→	Dram	Cut	Metric	Worsted	Cotton	Typp	Run
	1	.853	.516	.457	.305	.256	.160
	2	1.707	1.032	.914	.610	.512	.320
	3	2.560	1.548	1.371	.814	.760	.480
	4	3.413	2.064	1.829	1.219	1.024	.640
	5	4.266	2.581	2.286	1.524	1.280	.800
	6	5.120	3.097	2.743	1.829	1.536	.960
	7	5.973	3.613	3.200	2.133	1.792	1.120
	8	6.826	4.129	3.657	2.438	2.048	1.280
	9	7.680	4.645	4.114	2.743	2.304	1.440

Known Counts in Cut System

Equivalent counts in→	Dram	Cut	Metric	Worsted	Cotton	Typp	Run
	1.172	**1**	.605	.536	.357	.300	.188
	2.344	**2**	1.210	1.071	.714	.600	.375
	3.516	**3**	1.814	1.607	1.071	.900	.563
	4.687	**4**	2.419	2.143	1.429	1.200	.750
	5.859	**5**	3.024	2.679	1.786	1.500	.938
	7.031	**6**	3.629	3.214	2.143	1.800	1.125
	8.203	**7**	4.234	3.750	2.500	2.100	1.313
	9.375	**8**	4.839	4.286	2.857	2.400	1.500
	10.547	**9**	5.443	4.821	3.214	2.700	1.688

Known Counts in Metric System

Equivalent counts in→	Dram	Cut	Metric	Worsted	Cotton	Typp	Run
	1.938	1.653	**1**	.886	.590	.496	.310
	3.875	3.307	**2**	1.771	1.181	.992	.620
	5.813	4.960	**3**	2.657	1.771	1.488	.930
	7.750	6.613	**4**	3.543	2.362	1.984	1.240
	9.688	8.266	**5**	4.429	2.952	2.480	1.550
	11.625	9.920	**6**	5.314	3.543	2.976	1.860
	13.563	11.573	**7**	6.200	4.133	3.472	2.170
	15.500	13.226	**8**	7.086	4.724	3.968	2.480
	17.438	14.880	**9**	7.971	5.314	4.464	2.790

Known Counts in Worsted System

Equivalent counts in→	Dram	Cut	Metric	Worsted	Cotton	Typp	Run
	2.188	1.867	1.129	**1**	.667	.560	.350
	4.375	3.733	2.258	**2**	1.333	1.120	.700
	6.563	5.600	3.387	**3**	2.000	1.680	1.050
	8.750	7.466	4.516	**4**	2.667	2.240	1.400
	10.938	9.333	5.645	**5**	3.333	2.800	1.750
	13.125	11.200	6.774	**6**	4.000	3.360	2.100
	15.313	13.066	7.903	**7**	4.667	3.920	2.450
	17.500	14.933	9.032	**8**	5.333	4.480	2.800
	19.688	16.800	10.161	**9**	6.000	5.040	3.150

Known Counts in Cotton system

Equivalent counts in→	Dram	Cut	Metric	Worsted	Cotton	Typp	Run
	3.280	2.800	1.694	1.500	**1**	.840	.525
	6.562	5.600	3.388	3.000	**2**	1.680	1.050
	9.843	8.400	5.082	4.500	**3**	2.520	1.575
	13.124	11.200	6.776	6.000	**4**	3.360	2.100
	16.405	14.000	8.470	7.500	**5**	4.200	2.625
	19.686	16.800	10.164	9.000	**6**	5.040	3.150
	22.967	19.600	11.858	10.500	**7**	5.880	3.675
	26.248	22.400	13.552	12.000	**8**	6.720	4.200
	29.529	25.200	15.246	13.500	**9**	7.560	4.725

Known Counts in Typp System

Equivalent counts in→	Dram	Cut	Metric	Worsted	Cotton	Typp	Run
	3.906	3.333	2.016	1.786	1.191	**1**	.625
	7.812	6.667	4.032	3.572	2.382	**2**	1.250
	11.718	10.000	6.048	5.358	3.573	**3**	1.875
	15.624	13.333	8.064	7.144	4.764	**4**	2.500
	19.530	16.667	10.080	8.930	5,955	**5**	3.125
	23.436	20.000	12.096	10.716	7.146	**6**	3.750
	27.342	23.333	14.112	12.502	8.337	**7**	4.375
	31.248	26.667	16.128	14.288	9.528	**8**	5.000
	35.154	30.000	18.144	16.074	10.719	**9**	5.625

Known Counts in Run System

Equivalent counts in→	Dram	Cut	Metric	Worsted	Cotton	Typp	Run
	6.250	5.333	3.226	2.857	1.905	1.600	**1**
	12.500	10.667	6.452	5.714	3.810	3.200	**2**
	18.750	16.000	9.678	8.571	5.715	4.800	**3**
	25.000	21.333	12.904	11.428	7.620	6.400	**4**
	31.250	26.667	16.130	14.285	9.525	8.000	**5**
	37.500	32.000	19.356	17.142	11.430	9.600	**6**
	43.750	37.333	22.582	20.000	13.335	11.200	**7**
	50.000	42.667	25.808	22.856	15.240	12.800	**8**
	56.250	48.000	29.034	25.713	17.145	14.400	**9**

Manual of Military Fabrics

Part VIII, Supplement—9-oz. Sateen, Type I

Manufacturing and processing details for fabric adopted for field jackets

To meet the need by textile mills for complete data on gray constructions, yarn organizations, weaving and finishing of fabrics required in large quantities for miltary use, TEXTILE WORLD, with the approval of officers of the Quartermaster Corps, began publication in the February, 1943, issue of a Manual of Military Fabrics. The mill organizations and other manufacturing and processing data were furnished through the cooperation of textile mills which are producing these fabrics under Government contract. It is recognized that other plants having different types of equipment will have to make some modifications in the organizations, formulas, and procedures presented. Accordingly, these data should be regarded not as "standards" which must be followed, but as guides to the more efficient production of this fabric. Parts previously published are as follows: Part I, 5-oz. Poplin Type II, P.Q.D. No. 1, February; Part II, 6-oz. Cotton Twill, Army Specifications 6-311, March; Part III, 8.2-oz. Cotton Twill, Type I, Army Specification, 6-201B, April; Part IV, 8.2-oz. Cotton Twill, Type II, Army Specification 6-201B, May; Part V, 8.5-oz. Herringbone Twill, Army Specification 6-261, June; Part VI, 8.2-oz. Cotton Twill, Type IV, Army Specification 6-201B, July; Part VII, 32-oz. Melton, Army Specification No. 8-53-A, August; Part VIII, 9-oz. Sateen, Army Specification, P.Q.D. 245D, September; Part IX, No. 6 Numbered Duck, Type I, Army Specification J.Q.D. No. 208C, October; Part X, Dyed Numbered Duck, Type I, Army Specification J.Q.D. 226B and 242, November; Part XI, 18-oz. Serge, Army Specification No. 8-94 A, December.

MILL ORGANIZATION FOR 9-OZ. SATEEN, TYPE I

Winding and Quilling Organization No. 5

24/2 combed filling yarn

Winding:

6¼ in. cone type pkg.
1½ lb. per pkg.

Quilling:

1 3/32 in. quill type pkg.
7 in. quill
.88 oz. per quill
6 yd. bunch
1½ in. taper

Warping Organization No. 8

36/2 combed warp yarn
10,000 yd. length set
8 beams per set
560 ends per beam
Magazine type creel—560 end capacity

Slashing Organization No. 7

18 yd. per min. slasher
4% size
Size Formula:
35 lb. potato starch
3 lb. tallow
1½ lb. wax
100 gal. finished

Drawing-in and Weaving Organization No. 8

9 oz. per sq. yd.; sateen, 36-in. finished width

Drawing-in:

5 harness; tape salvage
895 ends per harness body
⅜ in. single end type harness
12 in. length heddle
Duplex type heddle
Mechanical type drop wire; Draper No. 13200
3 drop wires to an end

Weaving:

Gray: Oz. per linear yd. 10.68; yd. per lb. 1.50
Width 41¾ in.
Warp ends per in. 107, picks per in. 70
Warp yarn 36/2; fill. yarn 24/2
Percent of warp 52.66; percent of filling 47.34
Selv. threads 36/2
Ends selv. 40; 2 per eye, 4 per dent
Dents/in. 20.55; ends/dent 5
Reed spread 43.61 in. No. harness 5
Straight draw
Ends per eye 1; weave sateen
Take-up warp 12½%; take-up filling 4.26%

Cloth Room Organization No. 8

No. inspections—One
Type inspection—Hand
No. sides burled—Face
No. brushings—None
No. Shearings—One
Type Grading—Hand
Folding—Folded
Length of fold—1 yd.
Bales or rolls—Bales
Finished yd. per cut—Not less than 50 yd.
Total yd. per pkg.—950 to 1000 yd.

WIND-RESISTANT COTTON, 9-oz. sateen, covered by PQD 245D has been adopted as the standard fabric for the new field jackets—with or without pile-fabric lining—used by the Army. This fabric was developed last year and was used first in trousers for mountain troops to date.

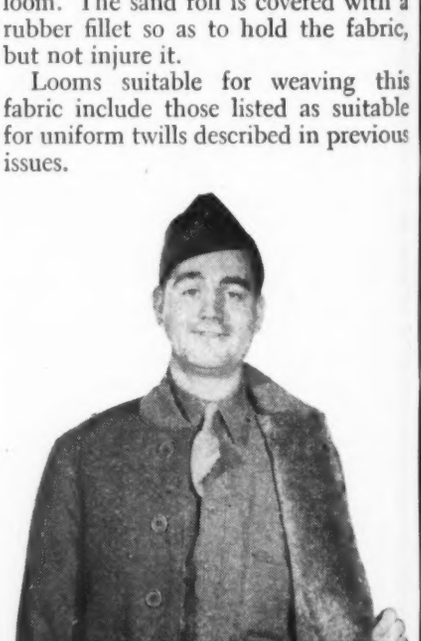
TEXTILE WORLD in its September, 1943, issue published an abstract of the specification on the 9-oz. sateen, together with yarn, fabric, and finishing details not given in the specification. Below are present further manufacturing details which should prove helpful to any textile mill intending to produce this type of fabric under government contract.

MANUFACTURING DETAILS

Yarn Manufacture—Yarns used are 36/2 combed warp and 24/2 combed filling, as given in detailed mill organization for 8.2 oz. twill, Type I and appearing in the April, 1943, issue of TEXTILE WORLD.

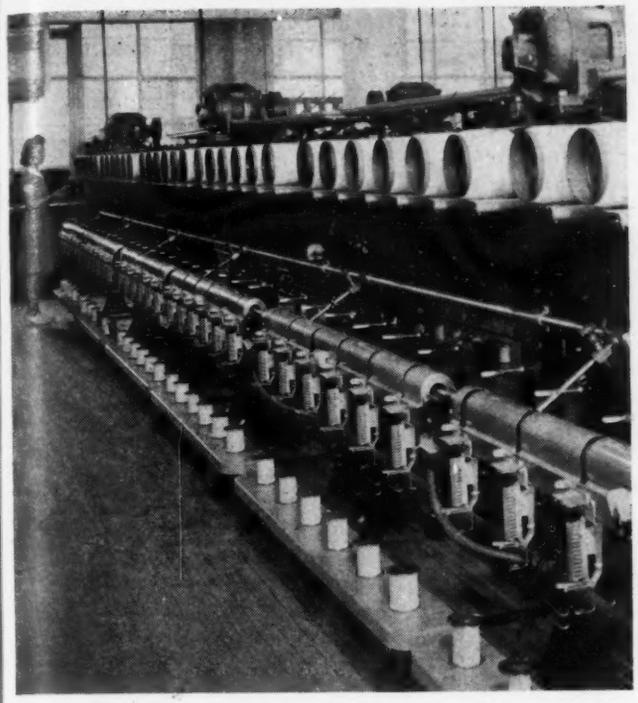
Fabric Manufacture—Set loom with the whip roll high, the reed to 2½-in. from the fell of the cloth, and the breast beam medium. The cloth is woven face up on a 44-in. Draper XK loom. The sand roll is covered with a rubber fillet so as to hold the fabric, but not injure it.

Looms suitable for weaving this fabric include those listed as suitable for uniform twills described in previous issues.



Photograph at right shows new field jacket made from 9-oz. sateen with pile-fabric lining.

Photo Section Philadelphia Q. M. Depot



Single-end sizing of Nylon yarn previous to warp preparation.

NEW IDEAS on Handling NYLON in the Mill

HIGHLIGHTS: Tension Devices for Nylon — Single-End Sizing — Warping — Quilling — Weaving — Control of Static

TWO TYPES OF NYLON YARN are now being produced for textile uses—a standard yarn and a high-tenacity yarn. At present practically all Nylon is being employed for military purposes. After the war, it will find application in a wide range of fabrics for civilian use. Data on the physical and chemical properties of Nylon were given in the September, 1943, issue of TEXTILE WORLD. More recently, the Nylon Division of E. I. du Pont de Nemours & Co. has issued a booklet discussing the characteristics of Nylon in more detail and outlining methods and precautions to be taken in handling Nylon in the mill. The following information on throwing, warp preparation, and weaving is abstracted from that booklet. In releasing that information, the Nylon Division emphasizes the fact that although the procedures described are believed to be satisfactory, they cannot be guaranteed to give good results and are subject to revision as additional knowledge and experience are gained. Accordingly, they should be considered as suggestions to form the basis for further experiments and work to be carried out by the mills using the yarn.

TENSION DEVICES. Washboard, or gate tension devices, have generally resulted in reasonably uniform thread tensions. They partially compensate for comparatively slow changes in tension on the yarn. Very rapid changes in tension tend to make the washboard devices react in such a manner that very high instantaneous tensions are developed.

Snubbing tensions, such as rods, bars, eyelets, etc., are often found satisfactory, but should not be used where the supply thread tension or coefficient of friction varies much.

In general, pinch tension devices are satisfactory for certain types of work, such as redrawing or quilling sized yarn. They add tension, rather than increasing it geometrically or logarithmically as in the case of the snubbing devices. A modified form of pinch tension devices consists of horizontal disks between which the thread passes, and where the disks turn at a somewhat slower speed than that corresponding to the thread speed. Pinch tensions have not been satisfactory for unsized Nylon of very low twist yarn.

Whorl or rotating drum tensions are generally satisfactory for use on Nylon in a mill which has an adequate maintenance program.

Generally, the most satisfactory tension device is one that gives the lowest uniform tension consistent with satisfactory performance and good package formation.

Two knots are used on Nylon. These are the double chicken-head knot, and the double weaver's knot. This latter type knot, double weaver's, is preferable for weaving. The single weaver's knot itself is not satisfactory for use on Nylon because of slippage.

OILS FOR NYLON. Essential requirements of a textile oil for Nylon are that it should be chemically stable, of low acidity, and easily removed under normal scouring conditions; that it will not discolor or degrade the yarn or degrade on exposure; and that it possesses adequate lubricating qualities.

Vegetable oils have been used, and mixtures of mineral and vegetable oils have been found satisfactory.

Data secured to date indicate that sized and oiled yarns give much wider tension variations than sized and unoiled yarns. However, oiled yarn cuts down on size deposit and helps hold the filaments together.

THROWSTER TINTS. Although there are numerous types of dyes which are capable of tinting Nylon yarn to a satisfactory shade, very few tints are satisfactory, because the dyes are more or less permanently impregnated into the yarn if the yarn is subjected to any setting treatment prior to removal of the tints. There has been no satisfactory oil tint put into general use on Nylon yarn.

The following dyes have been found satisfactory when applied in a size solution: Naphthal Green B. Conc., Thioflavine TCN, Auramine O, Green BL Conc., Victoria Small Green Crystals, Canary, Jade S, Brilliant Blue GA, Peach Throwster's Tint.

SINGLE-END SIZING. Single-end sizing machines are essentially converted cone winders. The unsized thread, traveling at mean speeds of 2,000 to 3,000 ft. per min., makes a vertical contact over a 5° arc on a smooth, ro-

tating surface roll that dips into a trough of circulating sizing solution. To insure a minimum increase in yarn speed, the take-up bobbin consists of a special cylindrical Bakelite sleeve or shell, 6 in. in diameter. The actual sizing and incidental drying of the yarn is carried out under controlled conditions of temperature and humidity.

Currently the most widely used single end sizing material for Nylon yarn is basically a water solution of polyvinyl alcohol. Additions of a plasticizing material can be made to this formula, and the resulting size is most adaptable to low-twist yarns which are to be post twisted to higher number of turns.

In connection with single-end sizing the following points should be emphasized:

1. The amount of size on yarn is generally limited to 4.5%, due to excessive flaking off of size from the yarn when that amount is exceeded.

2. The amount of size applied to yarn is practically proportional to the sizing-roll speed in the size trough.

3. The viscosity of the sizing solution is controlled by means of standard Saybolt viscosity tests.

4. The temperature of the size bath is dependent upon the sizing room temperature plus a slight additional rise induced by heat generated by the circulating pump. It is important to maintain a bath temperature range under 90° F. since above this temperature the solubility of the size decreases appreciably and rapidly reaches a point where precipitation will occur.

5. The yarn tension in sizing should be such as to insure a springy package which is neither hard nor mushy. At no time should the tension drop to the point of causing yarn flutter at the arc of contact on the size roll, as this will contribute to non-uniform and excessive size application.

Unsized Nylon yarn tends to build very dense packages, and should be redrawn at as low tension as practicable, both to prevent crushing the take-up package and to stretch the yarn as little as possible. Sized Nylon yarn does not require quite so much care in redrawing as unsized Nylon. The size acts as a protective coating and also seems to reduce the tendency of Nylon yarn to stretch under tension.

WARPING AND WARP SIZING. In warping, the higher the relative humidity, the greater is the tendency toward size deposit on machine parts and the less is the tendency toward trouble from static electricity. Probably the most satisfactory tension device for warping, everything considered, is a modified gate (washboard) device.

It has been the experience of several mills that warping efficiencies were improved by using a four-way lease reed, dividing the yarn into four separate horizontal sheets. These sheets are never allowed to cross, instead of making the yarn cross itself before going onto the mill.

Warp sizing of unsized Nylon yarn has not been developed to the same degree as yarn sizing. On the other hand, warp sizing on top of yarn-sized warps has been quite widely practiced, resulting in improved weaving efficiencies and a lower number of defects.

Excessive static in the yarn affects yarn quality, running tension, the rolling of ends, and the even, smooth lays on the warping drum or beam. Elimination of static on the yarn has been effected in some instances by the application of an anti-static oil or finish to the yarn. Also, the installation of certain types of static eliminators on the warpers has been fairly successful in eliminating static.

When slashing rayon yarns, it is customary to think in terms of percent stretch. On the other hand, with Nylon one should think in terms of shrinkage.

QUILLING. Good results have been obtained with Nylon by quilling to a hardness of 80 to 90 units on a Shore Durometer for both sized and unsized filling yarn. Thread tensions for sized 60-den. filling in the range of 20 to 35 grams have been found satisfactory.

Low-twist, unsized Nylon yarn offers the greatest problem in quilling. It is usually necessary to quill the unsized filling at a lower thread tension than the sized. Tensioning the yarn by pulling it between parallel disks is to be avoided. It is bad practice to tension yarn by means of wrapping the thread around an idler spool.

Any tendency toward springiness and sloughing of yarn on quills may be minimized by letting the quills stand in an atmosphere of very high relative humidity, at room temperatures, for several hours or for a day or two, before weaving. It is believed advisable to allow the quills to recondition at normal relative humidities after being conditioned at high relative humidities, before weaving.

"Steaming" the quills at much above room temperature results in variable width fabric within each quill section due to non-uniform removal of residual shrinkage from the yarn.

WEAVING. Weaving is most satisfactorily carried out at 50% to 70% relative humidity.

Tight picks, occasionally several occurring consecutively in the form of a band, have sometimes been found due to the looping of the yarn around the end of the shuttle while weaving. In at least one case this tendency was almost entirely corrected by putting fur on the lay near the shuttle box and trimming it to the optimum length.

Static troubles in filling yarn have been known to be reduced by quilling at higher tensions, such as 30 to 35 grams instead of 15 to 20 grams, without any bad effect on the appearance of the fabric. In this connection, higher shuttle tensions might also be tried. Attempts to ground the loom or loom parts have not succeeded in eliminating or minimizing difficulties due to static in filling yarns.

For good weaving, make clean warps.

Floats and stickers are caused by broken filaments, fluff balls, slubs, etc. Another cause of floats and/or stickers may arise from the way loom operators dispose of small bits of yarn. Small pieces of yarn have been known to jump as far as 2 ft. onto Nylon warp yarn because of static. Every piece of waste thread, no matter how large or how small, should be put in a bag or a pocket and not allowed any possible chance to get on the warp.

STATIC. Since the moisture regain of Nylon yarn is considerably lower than that of other textile fibers, such as rayon and acetate, the problem of static is necessarily more acute than with these latter yarns. For instance, it is known that the sliding of low-twist yarn over surfaces or between tension disks will definitely cause the filaments to balloon as soon as the tension on the thread is relaxed. The lower the relative humidity, the more pronounced is the effect. Similarly, high static in weaving will cause lick-ins at quill changes.

For mills which do not have apparatus for controlling relative humidity, all metal parts in which Nylon comes in contact should be thoroughly grounded, or adequate static eliminators should be added to the equipment. Grounding equipment is a safeguard against operator shocks, but does not control static formation on yarn or fabric. In general, relative humidities under 55% should be avoided, since in humidities lower than this static becomes objectionable. Probably the ideal conditions for handling Nylon are between 55 and 70% relative humidity for practically all processing operations. Humidities much over 70% should be avoided, primarily because at these high humidities the size on the Nylon becomes sticky and may deposit on the machine parts, and also because as the humidity increases the yarn may be strained much more easily.

FABRIC SAVES METAL in Machine-Gun Belts

HIGHLIGHTS: Development of .30 and .50 Caliber Belts—Types of Belts Employed — Yarn Specifications — Fabric Construction—Drawing-In Drafts—Chain Drafts — Finishing Processes Utilized

BY JAMES A. HENDLEY

Superintendent, Web Mfg. Division, the Russell Mfg. Co.

MANY SUBMARINES OR DESTROYERS could be produced with the pounds of steel saved to the country and the war effort in the recent purchase of many millions of .50 caliber fabric ammunition feed belts. Add to the above, the ships which could be built from the steel saved by past orders for .30 caliber fabric belts and future orders for both .30 and .50 caliber fabric belts and you would have quite a naval force. These savings make it possible for one to visualize quickly the size of this machine gun belt program. Bear in mind, too, that the above assumption is based on using the fabric belts one time only, where, as a matter of fact, many of them will be used dozens of times.

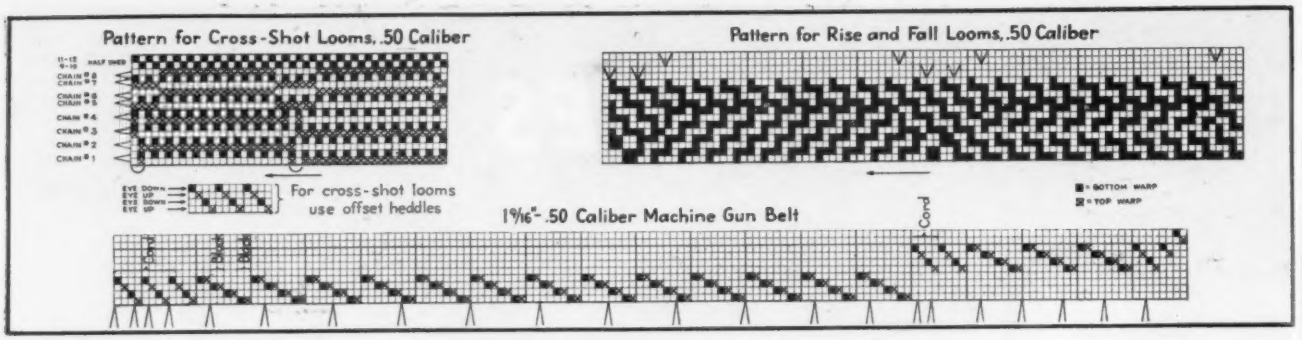
Machine gun belts can be divided into three classifications—the part-fabric, part-metal belt; the all-metal, steel-link belt; and the all-cotton, or Russell type of belt.

The fabric and metal belt is still widely used and especially by our enemies. This belt is expensive, is slow in production, and consumes many pounds of precious metal.

The all-cotton belt was developed early in World War I by Russell Mfg. Co., Middletown, Conn., for use in several types of guns, but chiefly the Browning. Although it proved very useful during World War I, it was never completely perfected.

The steel-link belt became of importance immediately after the first World War. It had the advantage of disintegrating as it was fired and ammunition belts of any length at all could be assembled. It proved to be satisfactory in aircraft because of this disintegrating feature. It had certain disadvantages, however, and these could not be ignored. It weighed six times as much as an all-cotton belt and consumed considerably more space in storage. In addition, it is far more expensive than a fabric belt.

The intensive sampling and development work on fabric ammunition feed belts for Browning guns began in 1928. The author had been given a defense job as a Russell weaver during World War I and then became thoroughly familiar with the machine-gun



belt problem. In his capacity as designer for Russell Mfg. Co. in 1928 the development of a satisfactory machine gun belt was listed as one of the long-range possibilities. Development work got under way almost immediately and with close cooperation from the Engineering Department of the Springfield Armory a suitable belt was developed and accepted by 1933. In November, 1936, Patent No. 2,061,-072 was issued which covers the construction and design of practically every Browning fabric machine gun belt used by the United Nations at this time.

During this period, occasional orders from Colts Patent Fire Arms, as well as the .22 caliber development by the United States Government kept interest and enthusiasm at a high pitch. This .22 caliber belt was a tiny affair of 100 rounds in length, $\frac{7}{16}$-in. wide, carefully woven of high-grade material for long life, repeated loadings and firing. The ammunition was inserted by the gunners with the fingers, time of loading being utilized for verbal gunnery instruction.

Production of machine gun belts for World War II began in August, 1941. Our then construction was one which could be made very satisfactorily on Russell looms, shown in the photograph on page 71, but there were practically no other looms in the United States capable of producing it. The problem therefore, was to simplify the construction to increase production by increasing the output of Russell looms and by building a belt adaptable to the looms of many other narrow fabric companies. This was accomplished in record time, the weave being converted from a herringbone rise-and-fall construction to a plain duck weave capable of fabrication in either rise-and-fall or cross-shot looms. This new development was quickly approved by the Army. In the meantime the Government had been granted free use of the Hendley machine gun belt patents issued and pending, and technical assistance was offered to all interested narrow fabric mills. As a direct result of this policy, at least fifteen narrow fabric manufacturers were in production by mid-year 1942. Current weekly shipments from the narrow-fabric manufacturers include ample machine gun belts of both .30 caliber and .50 caliber design.

A MACHINE GUN BELT is a conveyor belt for carrying the ammunition to a point in the interior of a machine gun. It must be tough and rugged because of the nature of the gun itself. A steel pawl advances the belt by contacting and pushing one loaded pocket forward at a time. The rate varies from 500 to 1200 per min. The belt also undergoes severe strain in the loading operation because the pockets are woven undersize and the ammunition is forced in.

The cotton used must be of good strength and elasticity and yet abundant enough in supply to take care of the huge program involved. Because of the improvements in the weaving construction, it is possible to make a strong belt without using Egyptian cotton, as was formerly allocated for machine gun belt manufacture in 1917–18. Neither is it necessary to use the American Pima or long-staple American Peeler. It has been found that good character staple of $1\frac{1}{32}$ to $1\frac{1}{16}$ in. is satisfactory. All of the cotton used is spun and twisted into 12/4 yarn with the exception of the special cord used as a reinforcement. In order to control the pocket spacing, stretching, shrinking, and cartridge grip, 8 t.p.i in this yarn are desired. Above this point too much elasticity adversely affects the functioning of the belt and below that point the "life" and cartridge grip falls away. The reinforcing cord is also made of the same character cotton but is wet twisted on a Brownell machine and is chemically treated under tension to remove most of the stretch. This cord reinforces the belt at critical points and is used on the selvage to prevent "bellmouthing." All the yarn is direct dyed olive drab with the exception of four black threads which form a stripe on alternating pockets for the purpose of pocket identification and quicker counting.

The basic weave of the fabric is a plain or duck weave. Two such fabrics are woven simultaneously and most of the warp threads pass through each other at intervals to form cartridge receiving pockets. On the loading edge of the belt for a width of $\frac{1}{16}$ to $\frac{1}{8}$ in. the warp threads do not cross. This forms a continuous "V" opening which aids in the mechanical loading of the belt, for as the bullet is inserted in one pocket it causes the next pocket to begin to separate.

In the main portion of the belt the warp threads cross once, for strength and durability, and in the balance or the bullet side of the belt the warp threads cross twice to form the narrow portion of the pocket for the neck of the cartridge. This latter portion of the belt, therefore, has twice as many pockets as the body of the belt and this is an important part of the construction. This secondary pocket formed between each cartridge gives the belt great flexibility and aids in rapid alignment of the bullets. Previous belts curved or flared when loaded due to the tapering of the cartridges. The larger portion of the cartridge contracts one side of the belt more than the smaller portion contracts the other, but this secondary pocket automatically opens up and contracts in an amount exactly equal to one-half the difference in the circumference of the cartridge at the two edges of the belt. This causes the loaded belt to lie in a perfectly straight line.

The detailed construction of the two belts follows:

.50 Caliber: Warp—156 ends of 12/4, 12 ends of #6 lockstitch cord.
Filling—1 end of 12/4.
Picks—38 per in.

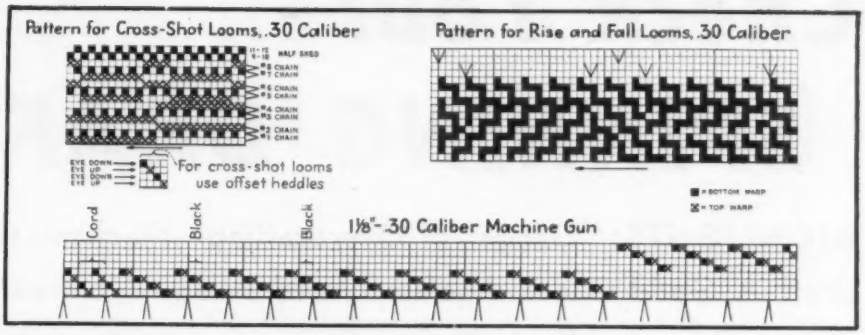
Drawing-in drafts and chains are shown in Fig. 2.

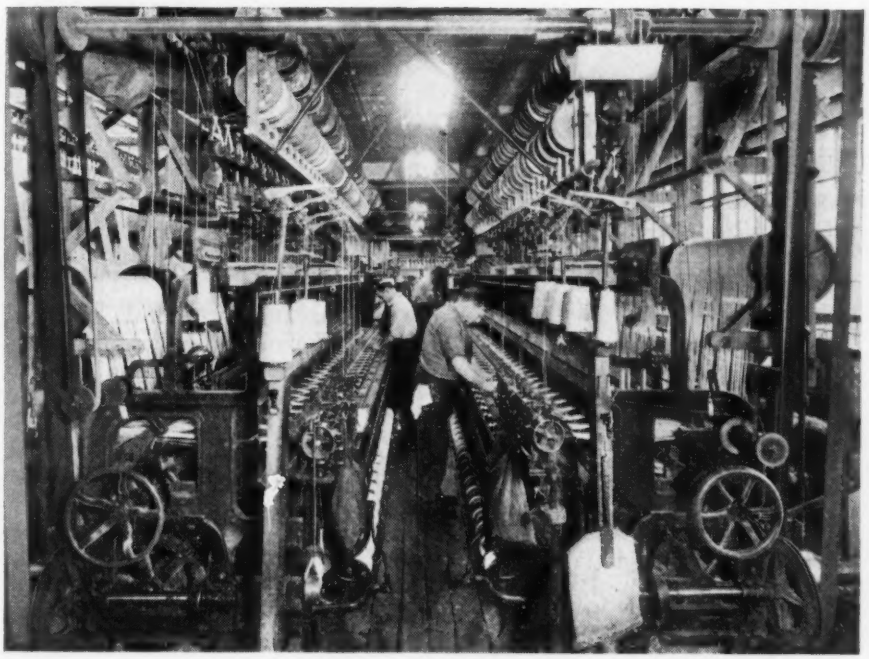
.30 Caliber: Warp—106 ends of 12/4, 4 ends of #6 lockstitch cord.
Filling—1 end of 12/4.
Picks—36 per in.

Fig. 2. Drawing-in and chain drafts for .50 caliber belt. ←

Fig. 3. Drawing-in and chain drafts for .30 caliber belt. →

Fig. 1. Narrow fabric looms used at Russell Mfg. Co. for weaving machine gun belts. ↓





Drawing-in drafts and chain drafts for the .30 caliber belt are illustrated in Fig. 3.

The keynote of good machine-gun belt production is accuracy and uniformity. This begins with the warping. Although regular narrow fabric warping methods can be used, best results can be obtained by using large section beams and weaving four to eight pieces from each beam. In this way warp tensions can be better controlled and the law of averages reduces possible variations from belt to belt. The best warps are made on a warp compressor, because this method insures the greatest uniformity of yarn lengths.

Weaving calls for skilled weavers who must pay close attention to the uniformity of their production. Each take-up roll must be positive in its grip and no large or small pockets can be tolerated. The webbing should be tightly blocked on the loom and kept in this condition until finished. The time interval between weaving and finishing should be as small as possible to eliminate the possibility of uneven shrinkage before "setting" on the drying cans.

THE FINISHING OPERATION must do two things, set the correct pocket spacing and chemically "proof" the fabric. Without extreme tension or shrinkage the finishing operation should result in exactly 29 pockets (plus or minus ½ pocket) per yard on the .50 caliber, and 33 pockets per 24 in. (plus or minus ¼-in.) on the .30 caliber. If the weaving follows the exact construction listed above and the finishing yields the correct pocket spacing, the loading of the belt and the extraction test will not be cause for worry.

The chemicals added to the belt in this finishing operation are two, namely a water-repellent and mildew-proofing compound. These finishing compounds must not appreciably affect the flexing of the belt and must not in any way contribute to tarnish on the ammunition. A 6-in. section of the belt carrying a 2-gram weight should float at least 2 hr. on the surface of water at room temperature.

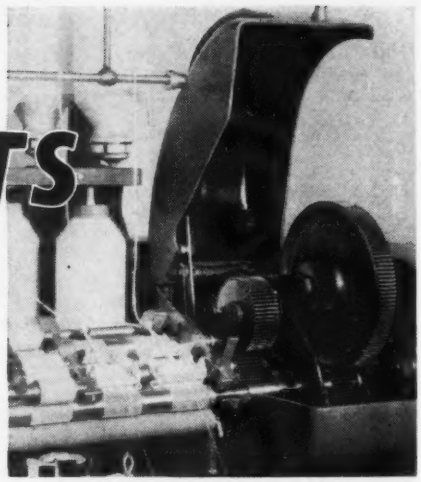
After finishing, the rolls of belting are passed through a pocket inspection machine. This machine inserts a gage at the rate of 1,000 strokes per min. in each pocket to see that it is open and properly woven and that it is correct for size. The belts are then cut to proper lengths and each 25th pocket stamped with the number of rounds so that the gunner always knows the number of cartridges left in the belt. In the .30 caliber belt, metal tangs are riveted or attached to one or both ends. The .50 caliber belt has a new development making possible continuous firing. A plastic is applied to the ends of these lengths which are then cut in such a manner that the belts can be coupled or hinged together by means of a cartridge. This means that two or more belts can be joined together and ammunition boxes of various sizes used without inconvenience. This inter-locking end also makes possible a dispersable belt for aircraft use, several short lengths being coupled together.

In addition to careful inspection all along the production line, many tests are necessary to be sure that the belts will function properly in service. The principal test is loading and extracting. A belt that loads properly will usually fire properly, but the cartridge grip must be sufficient to prevent the ammunition from "walking out." The belt should also load and fire correctly after being immersed in water for 12 hr. Perhaps the severest test for a fabric belt is to load it wet and then dry it out before firing. If this belt still retains its pocket grip it is fool-proof.

Test firing goes on continuously at Russell, sometimes running far into the night, as shown in the heading illustration with the author at the trigger of the gun.

Billions of rounds of ammunition will be fired from fabric belts. The program has already consumed many millions of pounds of yarn. This is brought about by the obvious advantages of a fabric belt, which are as follows—great tensile strength, flexibility, saving in weight, compactness, ease of loading, ease of salvage, cleaner ammunition, saving in cost and time.

Check Your SPINNING DRAFTS



HIGHLIGHTS: Danger of Overdrafting—Mechanical Draft A Good Check Against Overdrafting—Contraction and How it Affects Drafts—Taking Contraction into Account in Figuring Drafts—Sample Calculations

By F. H. GUNTHER and MARCUS GROSS

GOOD SPINNING by the long-draft system does not mean that the longest draft as computed by actual draft calculations should be employed. Therein lies a danger of over-drafing and a consequential reduction in tensile strength of the yarn. To obtain the full attenuation of the roving compatible with good spinning and acceptable quality, more attention must be centered on mechanical draft and less on actual draft, except for the purpose of initial calculations.

The mechanical draft is the positive draft. Nothing takes place within the drafting zones except drafting. The slippage of fibers in drafting is equivalent to the ratio established between surface speeds of rolls, and the reduction in all cross-sectional areas of roving depends upon the weight fed and the draft.

Let us assume, for example, that the longest draft employed is 20. It has been found that there is no undue spread of fibers and that the tensile strength can be maintained at this figure. The calculations on a 40s yarn to be spun from a 4.00 hank roving fed double-end with a draft constant of 1005 should be the following:

Actual draft:

$$\frac{40\ (2)}{4.00} = 20 \text{ (actual draft)}$$

$$\frac{1005}{20} = 50 \text{ (draft gear)}$$

Gearing in the constant:

$$\frac{119 \times 170 \times 8}{(1) \times 23 \times 7} = 1005 \text{ (constant)}$$

The mechanical draft:

$$\frac{119 \times 170 \times 8}{50 \times 23 \times 7} = 20.1 \text{ (mechanical draft)}$$

Here the mechanical draft is equal to the longest draft employed. The expectations are that increasing draft over 20.1 will give a weaker yarn.

YARN CONTRACTION. Beyond the front roll contraction takes place because the twist changes the weight or number of the yarn. Two factors to check constantly where the danger of over-drafting is present, are the roving weight and percentage of contraction. If the roving is consistently coming through heavy, this plus the contraction may cause the overseer repeatedly to lighten up without giving thought to the danger of doing so. If he is spinning at the limit of his draft range, the tensile weakness of his yarns will soon become apparent. What happens to this mechanical draft if no thought is given to it when the yarn is lightened up due to contraction of heavy roving? To illustrate, take a nominal 5% contraction of the yarn, with the first sizing indicating a 38s yarn, and with no roving size taken to figure contraction. Use the proportional method to "lighten up" or obtain a new draft gear to make the 40s yarn as follows:

$$\frac{38 \text{ yarn} \times 50 \text{ draft gear}}{40 \text{ (yarn wanted)}} = 47.5 \text{ or } 48 \text{ draft gear}$$

This change in the draft gear has increased the mechanical draft by slowing down the back roll and thus makes the yarn lighter. The mechanical draft when figured with a 48 draft gear now shows:

$$\frac{119 \times 170 \times 8}{48 \times 23 \times 7} = 20.9 \text{ (mechanical draft)}$$

This is an increase of 0.8 over the original mechanical draft. Now, if the roving keeps coming through on the heavy side and the overseer keeps changing his draft gear to maintain a count of 40, he may assume incorrectly that his draft is still 20; however, every time he lightens up without definitely finding out what happens to his mechanical draft, he will run into trouble. It is entirely possible in the course of a few weeks for the draft gear to be changed from 50 to 45 and the mechanical draft would then be:

$$\frac{119 \times 170 \times 8}{45 \times 23 \times 7} = 22.3 \text{ (mechanical draft)}$$

This is an increase of 2.2 over the safe maximum draft limit. Such a serious change in the mechanical draft limit would likely cause weak yarn.

DRAFT CALCULATIONS. In calculating drafts contraction must be considered and one of the best methods to determine the percentage of contraction or a general average thereof is to take the sizing of both roving and yarn and figure the ratio of the counts. Assume for instance that the actual roving size is 3.96 hank, the yarn count 38.75, then the actual draft which includes contraction would be:

$$\frac{38.75\ (2)}{3.96} = \text{Double roving} = 19.6$$

To find the percentage of contraction, trace the draft gearing and determine the mechanical draft. If a 49 draft gear is being used, the mechanical draft would be:

$$\frac{119 \times 170 \times 8}{49 \times 23 \times 7} = 20.5$$

Divide 20.5 into 19.6 and subtract from 1 to get the actual contraction.

$$\frac{19.6}{20.5} = 0.956 \quad 1 - 0.956 = 0.044 \text{ or } 4.4\% \text{ contraction.}$$

If spinning at the limit of the draft range of 20 occasionally causes trouble, the safest policy to follow would be to reduce the actual draft limit by 2 or 3; that is, instead of an actual draft, use a limit of 17 or 18. The fluctuation in the mechanical draft will seldom exceed the former limit of 20.

Mechanical drafts are so important that the overseer of spinning should check them often and keep a record of these drafts and also a check on roving, contraction, and twist multipliers.

Efficient TAX RECORDING Saves a Mill Money

HIGHLIGHTS: Income Withholding Tax Means More Clerical Work for Employers —Tax Deductions Combined on One Form; Records Must Be Available

By FRED MERISH

THE CURRENT TAX-PAYMENT ACT of 1943, popularly known as the "Pay-as-You-Go" income tax law, necessitates more recording routine for employers than any previous tax legislation; hence, the managements of textile mills should set up efficient tax-recording and tax-filing facilities, not only to save expense but to avoid penalties which are exacted for mistakes.

For efficiency, it is helpful to combine tax deductions on one form—social security, withholdings from income, Victory tax, State taxes, etc. Other deductions—such as war bond subscriptions, insurance, loan repayment, union dues, etc.—can be taken care of similarly. A combination form simplifies recording, analysis and the filing of reports. Such a form is shown in Fig. 1. You can prepare it yourself by ruling off a columnar cash-book sheet and writing in the headings. Lock the form into the cash book binder. Take no chance that it becomes mislaid or lost. You'll be in a bad way if you can't find your tax-deduction recordings when the time comes to file returns or to remit the withholdings to the tax office. The net wage payment may be entered in the cash book, and from there posted to the ledger, using the tax deduction form as an explanatory record of withholdings to help in filing reports.

TAX DEDUCTION FORM - YEAR_____

Name _____ Withholding exemption _____ Wages paid _____ Per _____
Address _____ Phone _____ Victory tax exemption _____ Payroll period _____
Social security number _____ Date employed _____ Type work _____ Employment terminated _____

Date	HOURS		WAGES			Total wages	TAXES						Total deductions	Net wages
	Regular	Overtime	Regular	Overtime	Other		Federal old age	With-holding	Victory tax					

Fig. 1. Tax deduction form for individual employee, with columns for Federal tax deductions and blank columns for other deductions.

The form illustrated is merely a suggestion. Adjust it to suit requirements, but record the tax deductions systematically. Use of such a form will minimize work, save expense, and avoid penalties. The mill with a large payroll may find a suitable form at the stationer's. If labor turnover is low and wages are paid weekly, get a form that eliminates the rewriting of employees' names each payday. Some companies find it more desirable to use a form listing all employees on the one sheet than to have an individual form for each employee.

SUMMARY TAX DEDUCTION SHEET - YEAR_____

Period, from _____ to _____

Employe's name	Total wages	Federal old age	With-holding	Victory			Total deductions	Net wages
Totals								

Fig. 2. Summary tax deduction sheet—Total of each employee's tax for the period is transferred from individual form to the above summary.

RECORDS MUST BE AVAILABLE. The writer would caution, however, against the use of card systems. He has audited payroll departments using cards alphabetically arranged and often could not find records because they were lost, strayed, stolen, or mis-filed. Losing tax recordings is a more serious matter than losing ordinary payroll records; hence, it is suggested that you make your recordings on sheets fastened in a loose-leaf ledger or post binder. No employer can afford to scatter tax-deduction recordings all over his books in different accounts now that this new tax bill is law. They must be kept in a concentrated area under close control. A combination tax-deduction form is the answer. Payroll routine is further

simplified if each employee is paid by check, with the deductions marked on stub or check so there is a clean-cut receipt for withholdings.

A summary sheet, as shown in Fig. 2, may be used, which will furnish figures for reporting the company's return to the tax office. When remitting to the collector, note mailing date, number and amount of bank receipts, and check number. Rule off with red line and start over again.

THE TAX FILE. Another aid to recording is the "Tax File," in which are placed all receipts, duplicates of returns, statements to employees, and other data pertaining to tax. Make a record of all tax business in sufficient detail to be able to give a lucid explanation to Government auditors.

Keep a "Tax Calendar" showing when payments and returns are due and when mailed, as a safeguard against penalties for forgetfulness. Keep the actual tax money in a separate account, or see that the funds are not used in business. Some employers, in the past, have used social-security deductions in their business and then had to dig down to settle on the due date. That tax is comparatively small; hence, they were not seriously inconvenienced financially, but the income tax withholdings of the new law are much larger and you may be in a tight spot if you don't have the money to settle when Uncle Sam says, "Come across."

Under the 1943 act, the employer must furnish to each employee, on or before Jan. 31 of the succeeding year, a written statement showing wages paid and the amount of tax withheld. Similar statement must also be furnished upon severance of employment. The employer must furnish to the Collector of Internal Revenue a statement showing wages paid each employee during the previous calendar year and the withholdings. Duplicates of these statements, if filed with the Collector, will supersede "Information Return Form 1099," which is required otherwise to be filed by Feb. 15 of the year following payment of the wages. The withholdings on income and victory taxes must be paid to the Collector or a designated depository, but it is not necessary to itemize the tax for each individual employee. In addition, the employer must report the quarterly wages paid employees for Federal old age benefit and State unemployment compensation taxes. Those employers having eight or more persons employed for 20 or more days during the calendar year, each such day in a different calendar week, must file a return on Form 940 under Federal unemployment compensation. Even though you have less than eight employees and thus need not file a Federal return, you may be subject to your State unemployment compensation law, which may apply if you have only one employee. Then too, the 1943 Federal law implies that an employee's tax liability is considered wages even though the employer pays the tax, hence, this deduction should be entered on the Tax Deduction Form.

Federal old age, Victory, and income-withholding returns cover quarterly periods of three months each, ending Mar. 31, June 30, Sept. 30, and Dec. 31. Thirty days grace is given to report and send remittance or receipts from bank to the Collector after each period. In New Jersey, State compensation is also paid quarterly for the same periods with 30 days grace to settle. The filings in other States depend upon the law. Get the facts from your State compensation office.

The Treasury Department has completed arrangements with banks to act as depositories for withholdings, and all employers withholding more than $100 during a month, must deposit this money in a local bank authorized by the Government. All banks insured by the Federal Deposit Insurance Corp. are eligible and more than likely will cooperate. Deposits must be made within 10 days after the close of each calendar month. The employer may, however, submit with his return to the Collector, the taxes withheld during the last month of the quarter instead of depositing them in the bank. The employer will get receipts from the bank for his monthly deposits, which he will include, in lieu of cash, with his return. These receipts should go into the "Tax File" until mailed to the Collector.

EXCESSIVE BOOKWORK. Tax deductions involve much more bookwork than in the halcyon days when taxes were less of a headache. Unless steps are taken to systematize and group this data properly, the work itself may cost more than it should, and the employer may be penalized if unable to furnish the proof behind his returns.

Worsted Spinning Nomograph

HIGHLIGHTS: Chart Simplifies Calculation of Delivery Rate and Bobbin Filling Time—Helps Determine Doffs

By MORRIS C. BISHOP

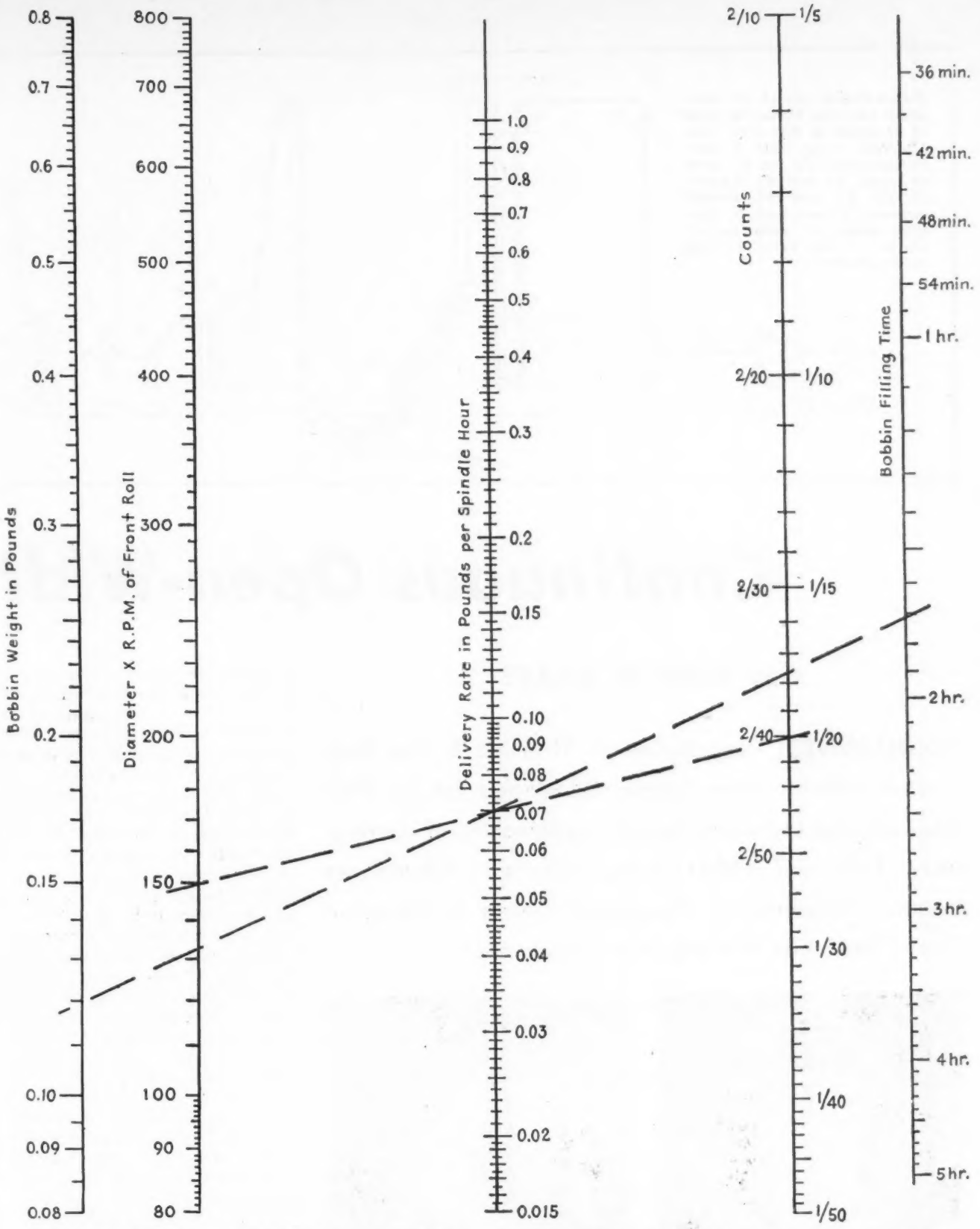
TIME-SAVING METHODS of calculating delivery rate and bobbin doffing cycle in Bradford spinning are often of assistance to operating executives. Consequently, the accompanying nomograph was prepared to permit the delivery rate in inches per minute during spinning to be obtained and the bobbin filling time in hours to be obtained without long and involved calculations which are normally necessary for laying out the work.

Determination of bobbin filling time is a necessary calculation which must be procured by any worsted mill superintendent when a change is made in the size of yarn being made. When wide changes are made in yarn sizes, as are required when a widely different count of yarn is to be spun, delivery rates must be obtained so as to permit corresponding changes to be evolved in doffing schedules. Production rates and piece rates must be established from the new doffing schedules and periods between doffs and creeling runout.

For example, assume that a mill is spinning 1/20s yarn on a frame of which the front roll speed is 37.5 r.p.m. and the diameter of the roll is standard at 4 in. The diameter multiplied by the r.p.m. of the roll is $37.5 \times 4 = 150$. Draw a straight line from 1/20 on the "counts" scale through to 150 on the "dia. $\times$ r.p.m. of front roll" scale. This line establishes the delivery rate at 0.07 lb. per spindle.

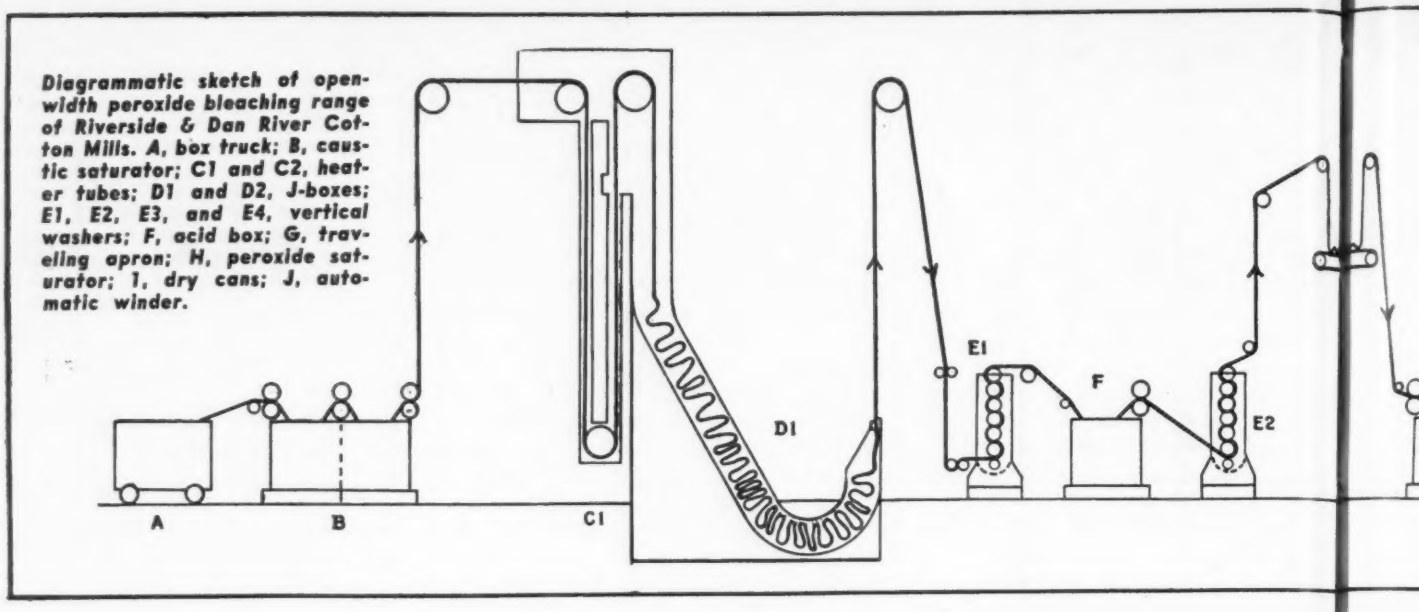
Assuming that spinning bobbins weigh 12 lb. net per doff of 100, the average bobbin weight is 0.12 lb. Hence, a line drawn through 0.12 of the left-hand scale and 0.07 of the middle scale gives a bobbin filling time of 1.7 or 1 hr. 42 min. on the right-hand scale.

Mill men desiring a nomograph that may be used for drawing may modify



NOMOGRAPH SHOWING DELIVERY RATE AND BOBBIN FILLING TIME

the one illustrated. The chart would then read in drams roving per 40 yd. instead of counts. Sliver weight ranges should be increased to keep the dram weight scale from 2 to 100 drams. Although slivers of greater weight are frequently encountered, to increase the range of the chart sufficiently would reduce its accuracy. Hence, it is advisable to maintain a 2 to 100 dram scale and, by shifting the decimal point an equal amount in the dram scale and delivery scale, keep the chart at usable size. All other scales remain the same for drawing as formerly, but the extent of the scales must be increased to correspond with that of the dram scale.



Diagrammatic sketch of open-width peroxide bleaching range of Riverside & Dan River Cotton Mills. A, box truck; B, caustic saturator; C1 and C2, heater tubes; D1 and D2, J-boxes; E1, E2, E3, and E4, vertical washers; F, acid box; G, traveling apron; H, peroxide saturator; I, dry cans; J, automatic winder.

Continuous Open-Width P

By WINN W. CHASE

HIGHLIGHTS: Installation at Riverside & Dan River Cotton Mills of New System Developed by Du Pont Chemists and Engineers Speeds Up Bleaching of Herringbone Twill and Other Army Fabrics — Advantages Include Uniformity of Treatment, Saving in Chemical Costs, Reduction of Manpower Requirements.

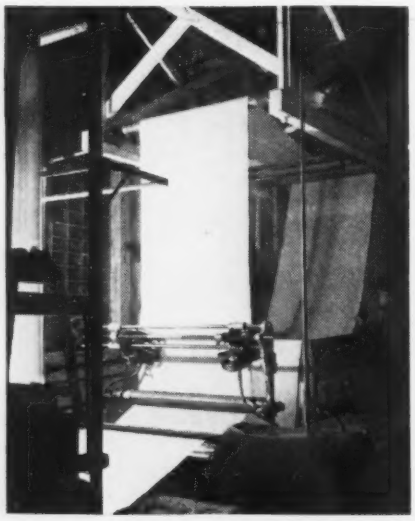


Fig. 1. Start of continuous open-width bleaching process at Riverside & Dan River. *Du Pont Photos by Rittase*

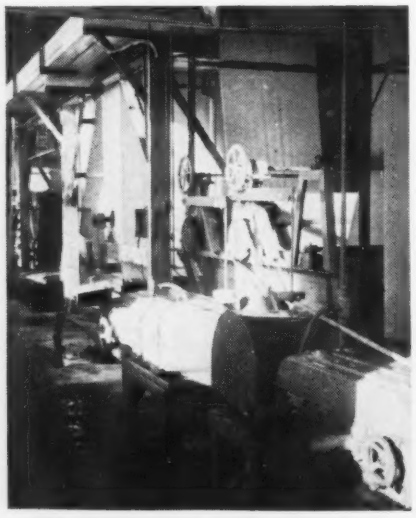
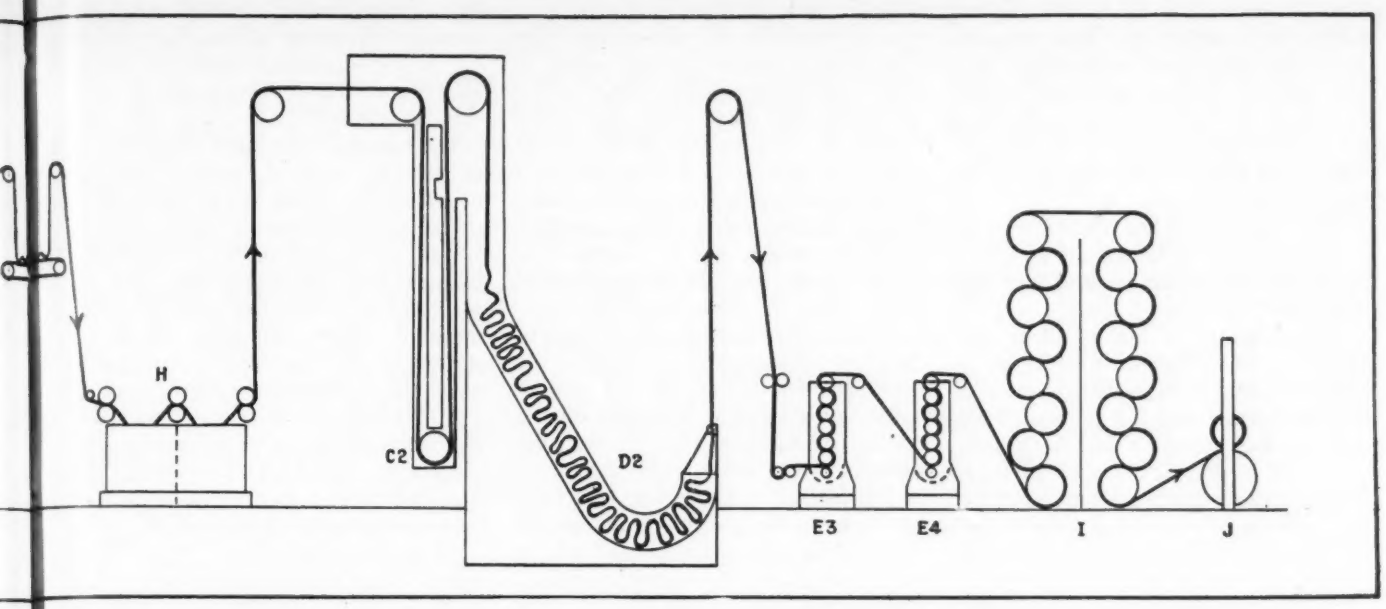


Fig. 2. Cloth passes through caustic saturator and enters first heater tube and J-box.

FIVE YEARS AGO in a New England textile mill the writer witnessed a demonstration of an experimental unit developed by E. I. du Pont de Nemours & Co. for the continuous peroxide bleaching of cotton fabrics. Last month at Riverside & Dan River Cotton Mills, Danville, Va., he was privileged to see in operation the latest open-width continuous peroxide bleaching range. This new open-width range, housed in a building of its own, is a far cry from the simple little heater tube and J-box which comprised that first experimental unit for bleaching in rope form. Fundamentally, however, the rope process and the open-width process are the same, both being based on the concept of applying steam to a continuously moving fabric which has been saturated previously with an alkaline peroxide solution. Development of the original process was a triumph of the chemist and the chemical engineer. Development of a successful open-width unit is a triumph of the mechanical engineer.

Currently the open-width range at Riverside & Dan River is being employed for peroxide bleaching of 8.5-oz. herringbone twill previous to vat dyeing. It has been used also for bleaching other Army fabrics, such as 8.2-oz. twill for uniforms and 56x56 sheeting for raincoats. Outstanding advantages of the continuous open-width system for bleaching twills and similar fabrics are the speed at which operation can be carried out, uniformity of treat-



PEROXIDE BLEACHING

ment, and absence of wrinkles or creases which would cause streaks in the dyed material.

DESCRIPTION OF RANGE. A diagrammatic sketch of the continuous open-width range is shown below. The fabric—which has been singed, desized, and mercerized, but not neutralized or dried—is drawn from a box truck, A, through selvage guiders and a spreader to a caustic impregnating box or saturator, *B*. This box, which has a capacity of 700 to 800 gal., is a single compartment, with two nips. Strength of the caustic soda is maintained at approximately 3% by constantly feeding in a more concentrated solution (12%) from a head tank. Temperature of the bath is between 110 and 115° F. Entering the bath, the cloth has a moisture content of 85%; and after passing through the second nip, a moisture content of 105%.

From the caustic saturator the goods go through a heater tube, *C1*, over a reel, and into a J-box, *D1*. In the heater tube, which is the heart of the Du Pont continuous peroxide bleaching system, the cloth is subjected to the action of steam at atmospheric pressure. As can be seen from the sketch, the heater tube is built in the shape of a "U." Guide rollers at the top of each leg of the "U" are driven. Steam enters the heater tube through perforated pipes located near the top of the tube at the delivery end. Atmospheric temperature in the heater tube is maintained at 211 to 212° F., giving a cloth temperature of 202 to 204° F. Herringbone twills remain in the J-box for approximately 1¼ hr. Curvature of the J-box is such that it permits the cloth to slide around until it is in the proper position for pulling out with the least possible tension.

Leaving the J-box the cloth is skied through mechanical guiders to keep it at open width and then is passed through a 6-roll Butterworth vertical washer, *E1*, where it is washed with hot water. Next the fabric is soured with 1½% sulphuric acid in box *F*, and then is washed with cold water in a second vertical washer, *E2*. The cloth now goes on a traveling apron, G, consisting of wooden slats. This apron facilitates the synchronization of the speed of the section of the range preceding the apron and the section following the apron.

From the apron the fabric goes through a two-compartment box *H*. The first compartment contains cold water, and the second compartment or peroxide saturator contains a solution of hydrogen peroxide having a strength of ¾ of 1 volume (3 qt. of 100 volume

Fig. 3. After leaving the J-box, the goods are washed in a six-roll vertical washer.

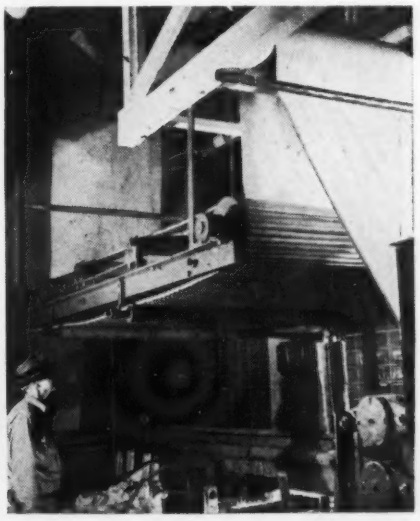


Fig. 4. Next the cloth is soured and washed and then goes onto a traveling apron.

H_2O_2 to 100 gal. of water) and adjusted to a pH of 10.6 to 10.8 with sodium silicate and caustic soda. The peroxide solution is at room temperature. The box is fitted with selvage guiders and bow bars at the entering end. Nips are so adjusted as to give the desired take up of peroxide solution from the second compartment.

Next the goods pass through a second heater tube, *C2*, and into a second J-box, *D2*, which are duplicates of the first heater tube and J-box.

After leaving the second J-box, the cloth is washed first with warm water and then with cold in two 6-roll vertical washers E3 and E4. It then passes over a compensator, through guiders, over a set of dry cans, *I*, and finally is wound on a Textile Finishing Machine Co. automatic winder, *J*, which permits one roll to be cut off and another started without stopping the range.

Over-all length of the open-width range including the dry cans is approximately 160 ft. Caustic and peroxide saturators, heater tubes, and J-boxes all are constructed of stainless steel; J-boxes are insulated to prevent heat losses. Heater tubes and J-boxes employed at Riverside & Dan River were built by Greenville Steel & Foundry Co.

Herringbone twill is processed at a cloth speed of 50 to 60 yd. per min., taking approximately 2 hr. 40 min. from the time it enters the caustic bath until it leaves the dry cans. Each J-box holds about 5,400 yd., which means that at any one time there is over 6 miles of cloth on the unit. Lighter fabrics can be run at higher speeds, so that regardless of the weight of the cloth, production averages somewhere around 2500 to 3000 lb. per hr.

ADVANTAGES OF OPEN-WIDTH PROCESS. In the continuous open-width system, variables are eliminated, each step in the process is under control, and every yard of goods receives the same treatment. For example, concentration of the caustic solution is controlled by means of a Solu-Bridge indicating instrument, the readings being checked frequently by titration; recording thermometers give the temperature in the J-boxes; the pH of the fabric at various steps is determined by means of a universal indicator; and strength of the peroxide solution is checked by titration.

By adjusting the strength of the caustic and the peroxide solutions, the supervisor can obtain any degree of bleach desired. Thus, for bleaching herringbone twills which are to be vat dyed to a dark olive drab shade, a weaker solution can be employed than for fabrics which are required in a full white. A special steam conditioning system developed by Du Pont, conditions the steam to the proper temperature, dryness, and degree of saturation; and delivers it in proper volume to the heater tubes. Squeeze rolls on the caustic saturator and peroxide saturator are pneumatically controlled; and volume of solution in each box is maintained constant by a liquid-level control.

The range is driven by General Electric a.c. motors and Reeves variable-speed drives, arranged in four groups—one group for the caustic saturator and first J-box; one for the intermediate vertical washers, acid saturator, and second J-box; one for the final vertical washers; and one for the dry cans. Hand controls permit all the drives to be synchronized.

Several advantages of continuous, open-width peroxide bleaching were mentioned above. Other advantages which are common to both the open-width and the rope systems of continuous peroxide bleaching, as compared with the older kier-boiling process or the jig method, include savings in chemicals, steam, water labor, floor space, and maintenance costs. For example, chemical costs are estimated to be between $1.50 and $2 per 1000 lb. of cloth, or about half that of older methods. Again, less than 750 lb. of steam per 1000 lb. of cloth is required with the continuous system, against 2500 to 3000 lb. in the kier method. An added advantage of the continuous method is that there is practically no degredation of the cotton as measured by cuprammonium fluidity tests.

It should be noted here that Riverside & Dan River also has in operation a Du Pont rope system of continuous bleaching which embodies many refinements over the early experimental units. For certain purposes, the rope system is fully as satisfactory as the continuous open-width system and, in fact, is preferable for many lightweight or fragile fabrics. On the other hand, for many other fabrics, such as twills, drills, etc., open-width bleaching is desirable and sometimes necessary.

For many years the goal of chemists and engineers has been to develop a satisfactory process and equipment for continuous, open-width bleaching of cotton piece goods. The enthusiasm displayed by officials of Riverside & Dan River Cotton Mills over the results they are obtaining with the continuous open-width, peroxide bleaching range described above is evidence that at last that goal has been attained.

Fig. 5. In this saturator the cloth is treated with a dilute solution of hydrogen peroxide.

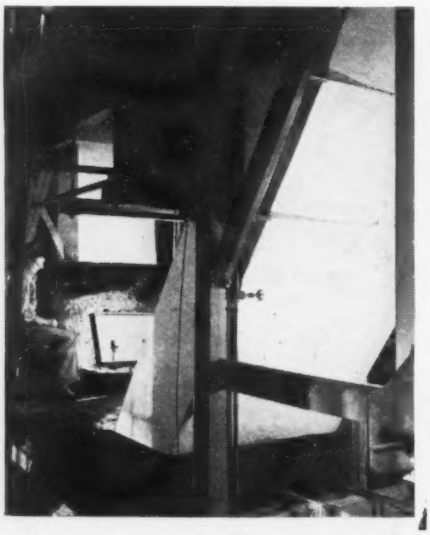


Fig. 6. From the peroxide saturator the goods pass through a second heater tube and J-box.

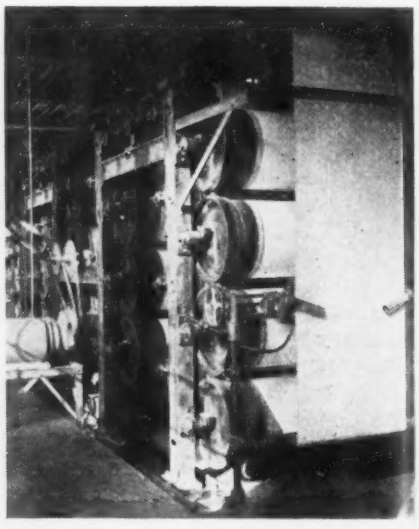


Fig. 7. The bleached cloth is washed on two vertical washers, dried, and wound on rolls.

A Fresh Approach to QUALITY CONTROL

HIGHLIGHTS: Control-Chart Method Has Six Definite Advantages—Technique Is Easily Mastered—Textile-Mill Applications Are Illustrated by a Typical Example

By O. P. BECKWITH
Research Engineer, Alexander Smith & Sons Carpet Co.

IMPROVEMENT IN QUALITY of products, greater consumer satisfaction, and economies in manufacturing are the three benefits which can be expected by textile manufacturers from the adoption of the control-chart method of controlling quality during production. Sometimes referred to as statistical quality control, the control-chart method depends for its success more on the technical skill of those responsible for quality control, than it does on their knowledge of statistics.

An article by A. G. Ashcroft, in the December, 1943, issue of TEXTILE WORLD commented on the adoption by Government procurement agencies of statistical quality-control methods to sampling techniques for acceptance inspection and testing of textiles and fabricated items, and outlined the development and use of these methods of quality control. The purpose of the present article is to illustrate the technique employed in the control-chart method of controlling quality during production by an example in textile manufacturing. An understanding of the few fundamental concepts of statistics necessary for intelligent use of this technique can be gained readily from reading two or three publications listed at the end of this article which were prepared for this specific purpose.

What is the purpose of controlling quality during production?

It is to reduce variations from standard quality to a minimum.

What is the purpose of the control-chart method of controlling quality during production?

It is to aid in reducing variations from standard quality to those due to chance.

Note that these two variations are not necessarily the same. In spinning a 1.00 run yarn, different spinners will differ in their judgment of what constitutes minimum variation. Therefore, one spinner may try to remove variations which cannot be eliminated except by uneconomic manufacturing changes, whereas another spinner may allow variations from standard weight which could readily be eliminated by such simple things as changing draft or setting of cards.

Use of the control-chart technique strikes an economic balance between the costs of trying to remove variation and the costs of accepting variable quality.

The advantages of controlling quality during production are readily understandable, but we are concerned in knowing how the control-chart method of controlling quality makes them more readily obtainable than any other system of quality control. To understand this, let us go through the operations necessary for statistical control, using the operation of yarn spinning as an example.

The control-chart method of controlling quality may be sub-divided into the following five steps for this case:

1. Rational sub-grouping of the data.
2. Development of the sampling scheme.
3. Specification of the criterion for control.
4. Specification of the action to be taken when an observed value falls outside its control limits.
5. Specification for the state of statistical control.

RATIONAL SUB-GROUPING OF DATA. In sampling the spinning operation, we should group into one sample the observations of yarn weight on yarn produced under the same essential conditions. Selecting a sample on the basis of the doff of mule or frame fulfills this condition.

First, we will want to select a random sample from the doff. We may consider a random sample of a lot of material as one which fairly represents the lot. Whether or not a sample fairly represents a lot then depends, in general, on the sampler's knowledge of the manufacturing operation. Suppose we are to take our sample of yarn from a 216-spindle mule. How shall we select a sample of, say, 5 bobbins from the 216? We know from experience that the outside roving ends of the card spool are likely to be heavier than the inside ends of the card spool.

If we select bobbins which came only from the outside ends of the roving spool, the sample is likely to show the lot of yarn to be heavier than it actually is.

On the other hand, if we selected the five sample bobbins only from the center ends, the sample is likely to show the lot of yarn to be lighter and more uniform than it actually is. We must remember that the heavy outside ends are always present; therefore they should be represented in the sample—say one out of the five coming from an outside end.

How shall we select the sample of yarn from each bobbin? It is known that in mule spinning the yarn weight at the doff tends to be greater than at the start-up. Therefore, sampling only at either one of these two points would give an unrepresentative or non-random sample. To overcome this, we could sample each end of the bobbin and use the average of the two measurements as the yarn weight from the bobbin.

DEVELOPMENT OF SAMPLING SCHEME. In setting up the sampling scheme for the mule-spinning operation, we will want to select our samples at intervals based on an analysis of the production process. We will want to take frequent small samples rather than infrequent large samples, because it often hap-

pens that the things which cause abnormal variations in the production process are erratic; that is, come and go and come and go. Our sample, then, wants to be taken at such intervals that we are likely to detect these erratic causes. Obviously, a large sample taken at the end of the day will not tend to show erratic causes as readily as several small samples taken throughout the day. Then, too, in a large sample the causes of variation overlap and are averaged or masked. Use of a sequence of 20 samples of 5 is much more likely to show a trend in the manufacturing operation than 5 samples of 20. Further, the use of several small sub-groups spread over the day enables a quicker location of the cause of trouble than one large sample taken at the end of the day.

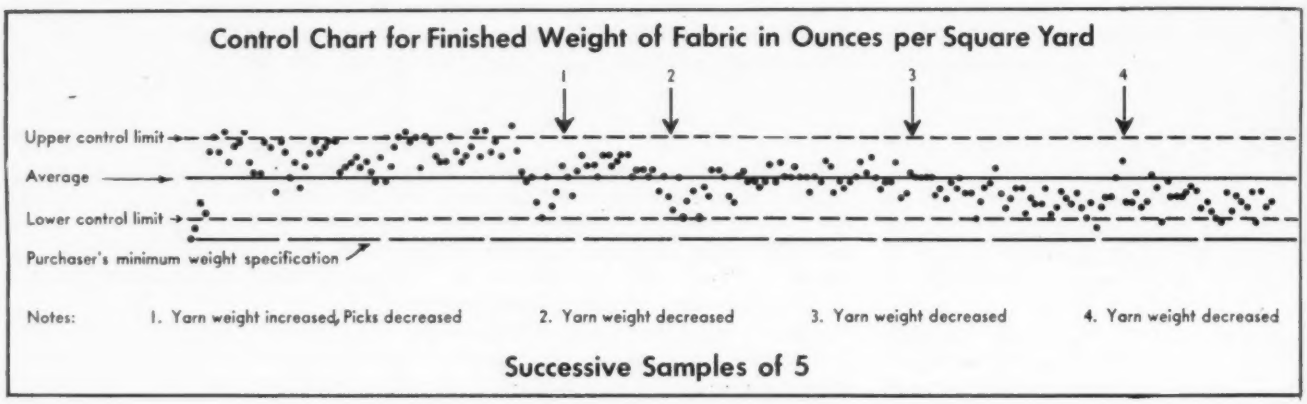


Fig. 1. Control chart illustrating the danger of improper selection of control limits. Although changes were made in manufacturing the fabric, these changes were ignored in computing the control limits. As a result, the chart for the greater part shows control, when it does not exist. This would be apparent to the practical mill man and would cause him to discredit the controlchart technique.

In determining when and where to take samples of yarn, we must consider the prior steps in the production process. Since variations (in amount of oil and water, for example) in the picking of a lot of wool affect the spinning operation, our samples of yarn should be taken so that each sample of 5 comes from one lot of stock and is not a mixture of two or more lots. The yarn should be sampled so that the roving from which it comes is confined to one group of cards, either by types—rings or tapes, by floors, or similar rational grouping if all cards are the same. If the same yarn were produced on both mules and frames, a separate system of control would be set up for the output of each type, and we would not mix samples from the two. Where mills lack good humidity control, it may be necessary to take a sample throughout the day; and, when more than one shift is operating, to sample from each shift.

In practice, such an elaborate breakdown of sampling may not be necessary, but until investigation proves otherwise it is well to start on this basis.

CRITERION FOR CONTROL. There are two steps in drawing up the specification of the criteria for control: (1) selection of standard values if they are not given (as is generally the case), and (2) computation of Central Line and Control Limits from the standard values.

Selection of standard values, $\overline{X'}$ (the weight of yarn) and σ (standard deviation) depends on: (1) the needs of the consumer as defined by his specification, and (2) the cost of production and capability of the manufacturing process.

In setting up the operation of statistical control on yarn spinning, assume that the yarn is being manufactured for a consumer whose specification states that the yarn from a sample of 5 bobbins of a lot shall be not less than 1.08 run in weight, or the lot shall be rejected. How shall we select our standard value for $\overline{X'}$ (the weight of yarn)? Since our knowledge of yarn variability tells us that a variation of $\pm$ 8% from standard weight is a reasonable expectation, we would place our standard at about 1.00 run. And we would not want our spinning production to vary in weight above 1.08 run, for fear of rejection, nor below 0.92 run for fear of losing money, since our manufacturing cost is based on 1.00-run yarn. Thus, we have selected a standard value for $\overline{X'}$ (the weight of yarn) and tentative control limits of $\pm$ 8% where we will take action on the production process if samples fall outside these limits.

The tentative control limits are based on experience and will be recomputed when sufficient production data have been obtained. The value of the limits obtained after controlled production is achieved will probably be less than $\pm$ 8%, but it may sometimes happen that it is more than the estimated value. Having acquired sufficient production data, at least 25 samples of 5, one can from these data select a standard value for σ provided the data show control. Therefore analysis of the data for control must be made. The method in brief is as follows: First, X, the average weight of the 25 samples of 5, is obtained; next σ (the average deviation in weight of the samples of 5) is obtained. From these statistics control limits for $\overline{X}$ (the average weight of each sample of 5), and for σ (the standard deviation—or range— of the sample of 5) are computed. If these data show control, the value of σ obtained from them may be used as the standard for this statistic.

If the data do not show control, those which do not may be discarded, provided there is good reason to believe that they come from production not manufactured under the same essential conditions. This is true, for example, if during the time that the 25 sets of samples were acquired one or more cards were put into production which had been newly clothed, or on which a new type of intermediate feed had been placed, or where a change in the oiling of the wool had occurred.

On the other hand, if the data show lack of control and there is no reason at the time to believe that those samples which showed lack of control were made under different conditions than those which showed control, then there are two courses which may be taken: (1) Accept the value of σ obtained from the uncontrolled data. setting up control limits with the realization that the process is uncontrolled and that the production opera-

tion must be studied and sources of variability removed; (2) continue with the tentative limits of ± 8%, but study the production operation and remove sources of variability as in (1). It is highly important, of course, that during this period the searching for the causes of lack of control be carried on, even though the points tend to fall within the control limits.

If causes of variability are found and removed, the production operation will approach a state of statistical control and sufficient control data can then be obtained on which control limits can be based.

The dangers of improper selection of standard values are shown in Fig. 1. Here control limits have been set on the finished weight per square yard of a fabric by computing control limits on the basis of all the plotted data. As noted on the chart, engineering changes were made in the processing of the fabric—the warp and filling yarns were changed in weight three times and the filling picks per inch were decreased. The computation of these control limits ignored these engineering changes and, as a result, the chart for the greater part shows control when actually it does not exist. The practical man when viewing the chart will readily observe the downward trend and say that the manufacturing operation shows a state of change—and not control. The new and not completely educated disciple of statistical quality control will confidently state the opposite, since the data fall within the limits. This, of course, brings discredit on the technique, since it is apparent that the operation does not show control.

Although the above illustration is rather obvious as to the incorrect selection of standard values, in practice we might have a similar set of data, but no knowledge of the nature of the specific changes or assignable causes taking place in the production process during the acquisition of the data. In such a case we would know that the limits were based on uncontrolled data because the first part shows lack of control. Since a downward trend is shown by the data, even though remaining in the control limits for the greater part, this in itself is an indication of lack of control. Therefore, our action would be to search for, find, and eliminate assignable causes—recomputing limits as they are removed. Such action is indicated in Fig. 2. Here the same data as in Fig. 1 are plotted, but control limits have been revised on the basis of changes in the process (the changes could as well have been unintentional ones). The first set of control limits is based on the first 70 observations. Lack of control is shown. The limits were revised after each change in manufacturing. It will be noted that the level has gradually been lowered, so that the lower limit coincides with the purchaser's specification minimum. The purchaser's specification states that a sample of 5 from a lot of material shall not be less than the weight designated. Since a state of control has been achieved, there is assurance that a sample of 5 will not fall below the minimum weight; and we cannot reduce the level further unless a radical change is made in our manufacturing methods or we wish to expose ourselves to rejections.

In the above illustration the improvement in control was not, of course, the result of the changes shown on the chart. Trouble was experienced with yarn strength. In the first change the weight of yarn was increased, which, under the particular conditions of manufacture, made a more uniform yarn. At the same time the yarn-weight increase was compensated for by a decrease in fabric picks per inch. Meanwhile considerable investigation of the spinning process showed how yarn could be spun at required strength and uniformity, but at reduced weight. The yarn weights were therefore lowered progressively, as is reflected by the third, fourth, and fifth changes in limits.

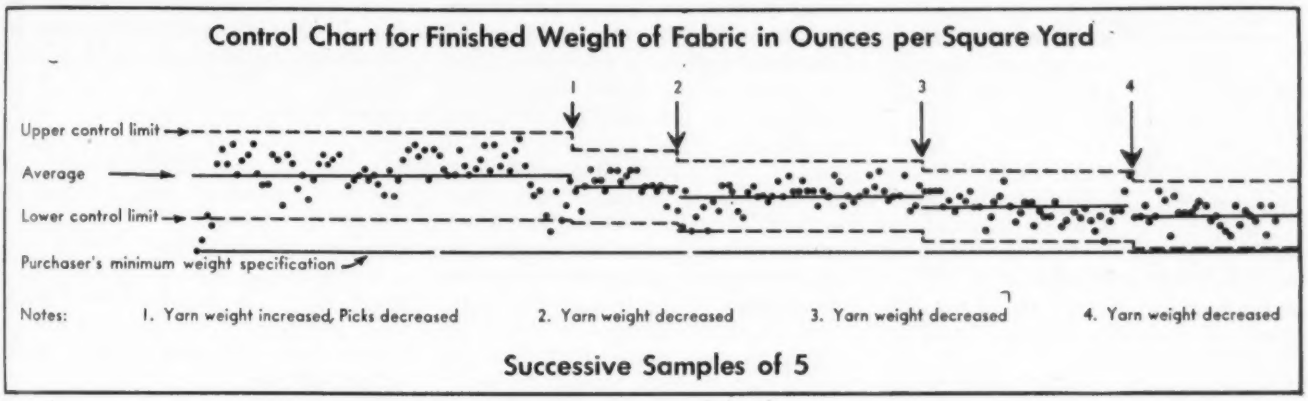
ACTION TO BE TAKEN. At this point in the yarn manufacturing illustration we shall assume that the proper standard values have been selected, the control limits computed, and controlled manufacture obtained (if it did not first exist) by studying the operations and investigating and removing causes of variation. If, after a period of controlled production, one or more points fall outside the limits, then investigation should be made immediately for the cause.

The detection of the cause is much more readily achieved than if no rational sampling system were used and judgment instead of statistical criterion were the basis of action. In the present case the samples are associated by time with a particular group of mules or frames. A systematic study of records of prior operations at that time may show, for example, the application of the incorrect amount of spinning emulsion; the wrong card, frame, or mule settings; or extreme fluctuations in humidity. Again, the points falling outside may all belong to one-shift's production, indicating differences in supervision or operator ability between shifts.

One precaution that should be constantly observed when a point falls outside the control limits is to check and be sure that it is not a mistake

(*Continued on page 134*)

Fig. 2. Control chart on which same data as in Fig. 1 have been plotted but with control limits revised after each change in manufacturing. The first set of control limits shows lack of control. In the fourth set the lower control limit coincides with the minimum-weight specification. As a state of control has been achieved, there is assurance that a sample of 5 will not fall below this weight.



WEAVE-ROOM PRACTICE

HIGHLIGHTS: "Meeting-by-Mail" of Textile Operating Executives of Georgia Summarized—Chart Shows Humidities Maintained in Weaving White and Colored Fabrics—Suggestions for Correcting Loom Stoppages at Transfer—How to Prevent Mispicks, Sloughed Filling, and Mixed Filling—Keeping Warps and Patterns Straight

METHODS EMPLOYED BY 17 MILLS for handling warps and patterns, eliminating weaving defects, and for regulating the humidities used in the weave room on various constructions, as reported by the members of the Textile Operating Executives of Georgia who participated in the recent "meeting-by-mail", are summarized in the following article and the accompanying chart. The chart and other data were compiled from replies to questionnaires mailed to the executive committee which planned the "meeting." The first part of the "meeting by mail" on slashing was reported in the December, 1943, issue of TEXTILE WORLD.

Study of the chart shows that humidity used on white work varies from 75 to 88% r.h. at room temperatures of from 80° to 90° F. Comparison of constructions and humidities reveals lower humidity being used on low-sley fabrics in one mill and a high humidity being used in another.

One member stated that when coarse and fine constructions are run in the same room, the humidity must be kept high enough to care for the finer constructions; that with 12s yarn or coarser it is possible to drop humidity as low as 75% r.h.; and that on sheetings with 40s to 50s yarn the humidity should be as high as possible.

CORRECTING STOPPAGE AT TRANSFER. In response to the question of how to eliminate loom stoppages on the transfer of very coarse filling, 14 mills answered as follows: Give more attention to the setting of the transfer motion; replace worn transfer hammer, see that transferer is not pushing the nose of the quill down before it pushes the quill butt down, and set the transferer so the quill will transfer in the center of the shuttle. Check and set battery with a gage and line and level to the lay; see that springs and clips are sufficiently snug to prevent quills turning in the battery and that the feed and stop pawls and battery spindle are not worn; see that battery hand pulls filling off down to the taper and places quill in battery with the end at a slight angle, and that she winds the filling end and loose ends on the battery horn securely.

Use only quills that are in good condition; make quill package properly, getting a good taper or stroke and use the correct lay for the yarn number being wound. Do not fill bobbin too full. Check tension on shuttle frequently and be sure sufficient tension is being used on the filling; put in new or extra bristles, or flannel as required. Use only shuttles in good condition; put a good groove in the shuttle; keep shuttle eye in line with the quill, and see that eye is not too open so as to prevent filling from threading properly. Parallel the pickers, decrease friction on shuttle box and use only enough power to box the shuttle. Be sure that picker stick is not projecting above picker in the battery end where it can break the filling; that the sword is tight on the rocker shaft; that the steel bands are tight enough to insure a snug fit of the Pitman arms to crankshaft; and that there is a snug fit of the eccentric pin in the sword. Put sufficient leather in lay end to prevent the shuttle going too deep; see that the loom begins picking from top center and that the stroke is not too long.

REDUCING MISPICKS. See that shuttle is properly grooved and that it is boxing correctly in both boxes. Keep proper amount of tension on filling. Have all the bristle work done on shuttles by one employee, using a template; bristles should be put in at a 45° angle and should be strong enough to suit the yarn number; see that shuttle is threading up properly; tighten shuttle spring; do not allow shuttles to bounce; remove rough places from shuttles; see that shuttles and eyes are smooth and in good shape; adjust check straps to check shuttle properly: keep thread cutters on transferer and the temples adjusted and in good repair; set shuttle so the transferer will transfer the quill as near center of shuttle as possible; set shuttle feeler in bottom of slot in stand with the cam timed correctly to allow shuttle plenty of time to get by on the transfer, as this keeps shuttle feeler knife from cutting the filling when shuttle is slow in getting into box; correct shuttle high in box.

Parallel pickers; use good parallel blocks and shoes. Keep midget feelers, temples, and thread cutters adjusted and in good condition. Keep race plate smooth; have front box leather flush with front boxplate. Keep shuttle-box front leather smooth and well grooved; keep all end play out of lay and filling cam set properly. Correct false change, high harness and set transferer properly. Battery hand not unwinding filling properly, loose shuttle spring, weaver not catching pick etc., all create mispicks.

Keep filling fork in good shape; brush out forks regularly; set filling forks properly so that they do not go too far into the grates. Keep good leather on binders and box plates; see if loom is breaking filling on transfer; and if thread cutter is cutting the filling before transfer. Be sure to cover binders properly; keep boxes in line to prevent false changes; correct ragged pickers or screws protruding from pickers; set feeler to be sure filling doesn't run out before change. Set pick cams to pick on top center; set stroke of picker properly; use as little power on pick as possible.

BOW CONTROL. Practical ways to control bow in fabric, brought out by the questionnaire, are to level the beam, whip roll, and girt, and square them with the loom sides; adjust crank arms to give the reed the same stroke to the fell of the cloth on each side; see that cloth is started evenly on tin rolls on each side; keep uniform tension on yarn in the slasher; see that harnesses are properly timed and shedded; that yarn is straight from whip roll, and that loom is picking properly. Keep loom properly lined; remove all loss motion from the lay and rocker shaft;

n Seventeen Mills

keep good fillet on the sand roll; run as high a setting on the warp as possible; and keep good take-up roll blocks in the loom.

ELIMINATING ROWY FILLING. Suggestions for preventing rowy or wavy filling are these: Keep harness set properly and harness cams in good condition, also treadle rollers and studs; match all take-up gears and see that take-up is working properly, and that sand roll gear is kept tight. Keep let-off and take-up working properly, see that sand roll is in good condition and is round and level; remove lint and dirt from under filling. Remove lost motion from Pitman arms, sand roll bearing and journals, and let-off bearings. See that loom beam is not too deep or too shallow in gear, and keep crankshaft bearings tight. See that the harnesses are timed and breaking properly; adjust whip roll so as not to be too high or too low; replace vibrating whip roll stand when worn; keep loom well oiled; use correct shuttle friction.

STOPPING SLOUGHED FILLING. To eliminate sloughed filling the following measures can be taken: Have proper stroke on filling builder and proper tension in shuttle; see that shuttle is checked properly. Build bobbin with a good long taper and stroke with a lay that is not too close. Determine proper build by experiment. Do not use excessive power on loom or let filling dry out too much or use filling that is too soft on bobbins. Use bobbins of proper size, design, and finish; eliminate excessive handling of filling; and do not keep too much filling on hand. Be sure that quill is firm and not too large, and that all single filling is properly conditioned with a good penetrating fluid. Keep moisture in filling at all times and do not allow it to dry over week-end. Train battery hand to pull off any slack yarn at head of the quill before putting it in battery. When spinning on quill, use a slow-down-fast-up traverse with at least 1¾ in. stroke and a traveler heavy enough to make filling lie tight on quill. Use quick-changing cams on filling frames, stroke 1⅞ in. for 23s to 39s. Avoid too light a traveler for spinning on quill.

Humidities for Weaving White and Colored Fabrics

as reported at "meeting by mail" of Textile Operating Executives of Georgia

Mill	Relative Humidity	Constructions	Warp Yarn	Filling
1	75%	46 to 68 sley	12/3 to 14/2	—
2	85% @ 80–84°F.	Print Cloth	31s to 40s	—
3	80%	38½" 44x40	30s	40s
4	*87½% @ 85°F.	—	—	—
5	85 to 88%	84x28	2½s to 13½s	2½s to 11s
6	85%	62x36 to 74x48	8s to 32s	8s to 32s
7	65% White 75% Color	5000 to 7000 ends	40s to 60s	—
8	80% Color 75% Terry	Terry	—	—
9	86% @ 90°F.	38½" 64x60, 5.35 yd.	31s	32s
10	75 to 80% White 80 to 85% Color	—	14s to 21s	—
11	75% coarse** 85% fine work	Sheetings	—	—
12	83%	Drills, Sateens	—	—
13	78%	50x144	15s	13s
14	85%	48x44 to 68x72	21s to 30s	—
15	70 to 75%	60x40 to 70x50	8s to 10s	10s to 20s

*Bring humidity up to normal 10–15 min. before starting time.
**High as possible on sheetings woven from 40s to 50s yarn.

KEEPING WARPS AND PATTERNS STRAIGHT. Suggestions on the way to keep warps and patterns straight in the slasher room, tying-in room, and weave room are as follows: Tie warps on the back of loom; use gummed tape on warps at the slasher; have slasher men run a lease string in about every fourth beam; inspect loom for misdraws and doubles and straighten up pattern before removing it from the loom; have lease-out men take pattern off loom, carry it to the tying-in room and place in a rack; clean, repair and place in rack near tying-in machine and then tie to warp and store warp and pattern in weave room.

KEEPING DOWN MIXED FILLING. Methods used to keep down mixed filling are the following: Mark filling with colored crayon at the quilling machine, being sure that color is marked on the bunch so that the filling can be identified if knocked out of the loom; tag each loom with the number and color of the filling being used. One mill paints the quill tips for identification of filling; another tags the pin boards but uses very little crayon; another uses two markings of one color to identify number and one to identify dye lot. In still another plant doffers mark the filling with chalk before doffing and put a tag in doff box with the date, frame number, and color on it. As frames are doffed, the crates are loaded on trucks holding eight crates of only one count and color. The truck is then pushed to the weave room, where the filling man sets each crate on the loom having a tag corresponding to the tag in the crate.

How Do You Like the "Grex"?

HIGHLIGHTS: New Universal Yarn-Numbering System Being Considered for Adoption — Has as Basis Grams per 10,000 Meters — Comments Invited.

By A. G. SCROGGIE

Chairman, Sub-committee B-2, Committee D-13, American Society for Testing Materials

USE IN THE TEXTILE INDUSTRY of various yarn-numbering systems based on hanks, cuts, runs, leas, typps, deniers, spyndles, etc., has caused trouble for many years. This confusion has become more intense recently with the penetration of yarns like rayon, Nylon, Vinyon, and Fortisan into the older cotton, linen, woolen, and worsted mills. These difficulties warrant the textile industry making a serious attempt to establish a universal yarn-numbering system; and Sub-committee B-2, Committee D-13, of the American Society for Testing Materials is currently considering, for this purpose, the "Grex" unit, defined as grams per 10,000 meters. The merits of the Grex system are outlined below. But before considering them in detail, it is well to review the basic characteristics of existing yarn-numbering systems and the factors involved in the establishment of a universal system.

Yarn-numbering units are based on either "Length per unit weight," or "Weight per unit length." The latter systems, referred to below as direct systems, are currently used by the silk, rayon, Nylon, Vinyon, Fortisan, and jute industries. Direct units are also used by the cotton, linen, woolen, and worsted industries for tops and slivers, and for the measurement of individual fibers. Direct units are characterized by small numbers for fine yarns, large numbers for coarse yarns or cords, and a corresponding increase in fabric weight for larger yarn numbers used in a standard fabric construction. Length-per-unit-weight systems, referred to below as reciprocal units, are used by the asbestos, cotton, glass, linen, woolen, and worsted industries for rovings and yarns.

Direct units are natural, since yarn numbering is invariably carried out by measuring or reeling a fixed length of yarn and weighing it. Such units can be added directly, and a specified difference in yarn number has the same meaning, in size or weight, at any place in the scale. Direct units are accordingly much easier to handle from a practical point of view.

It can also be demonstrated that easily decimalized units can be calculated much more rapidly than any system dependent on common fractions. It seems desirable, therefore, to use such a unit readily divisible by 10, 100, and 1,000, and to take advantage of the metric units of weight and length already established for this purpose. Readily decimalized units make it easy to measure and weigh 1/1000 of the standard length, or weight, which is difficult when using pounds and yards. Adoption of a readily decimalized unit in this way, does not, of course, mean that the industry must sell yarn by the kilogram or measure fabric by the square meter. Rayon producers, for instance, currently use a metric numbering system, but sell their product by the pound.

It is conceded that the introduction of any universal yarn-numbering system will cause more or less trouble for a short time, particularly in the cotton, woolen, worsted, and other industries, if a direct unit is established; and it is probable that no one system will prove ideal for all branches of the textile industry. It is contended, however, that the physical change would not be difficult to effect, since all operations now connected with yarn numbers could be changed by the use of easily prepared yarn-conversion tables. Testing instruments could be changed on a new or replacement basis if desired, and old and new units could be used during a transition period to insure a minimum of misunderstanding.

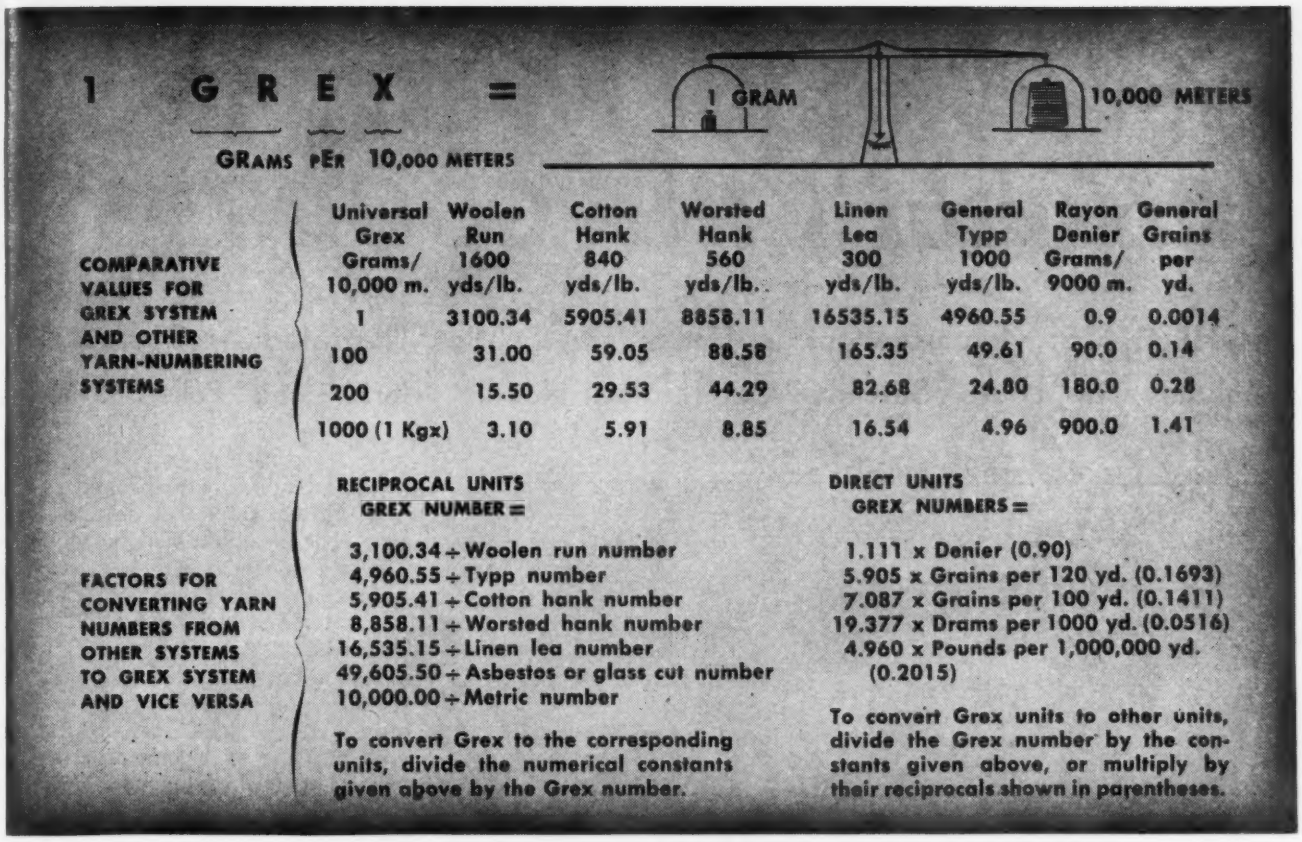
The effort that will have to be made, however, does demand that a careful review of existing and proposed systems be made, to be sure that the best possible system is being adopted.

ADVANTAGES OF GREX SYSTEM. The Grex system meets all the requirements for a simple, easily handled unit, as noted below.

1. It is a direct unit with the following inherent advantages: (a) Numbers can be determined by direct weighing. Weights of standard length skeins on metric balances will be in Grex units. Weights on grain balances will require a conversion table. (b) It has a large number for coarse yarns and cords, a small number for fine yarns, and unit numbers for single fibers or filaments. (c) A specific yarn-number difference has the same value at all parts of the scale and not an indefinite value, as in reciprocal systems. (d) The equivalent single yarn number of plied and corded structures can be determined by direct addition of the numbers of the single yarns, whether or not they are of the same fineness. (e) The adjustments required in laps, slivers, or draft to correct variations in finished varns will be strictly proportional to the variation observed in the yarn.

2. It is a decimalized unit with the

DO YOU FAVOR general adoption by the textile industry of the universal yarn-numbering system proposed in the accompanying article? The committee which is considering this proposal desires particularly to have your answers to these three questions: (1) Is a universal yarn-numbering system desirable? (2) Is this the best, or a suitable, time to adopt a universal numbering system? (3) Is the "Grex" the best system for the purpose? Let us have your opinion so that we can forward it to the author before a decision is made at the meeting of the American Society for Testing Materials.


1 GREX =
GRAMS PER 10,000 METERS
1 GRAM
10,000 METERS
COMPARATIVE VALUES FOR GREX SYSTEM AND OTHER YARN-NUMBERING SYSTEMS
Universal Grex Grams/ 10,000 m.
Woolen Run 1600 yds/lb.
Cotton Hank 840 yds/lb.
Worsted Hank 560 yds/lb.
Linen Lea 300 yds/lb.
General Typp 1000 yds/lb.
Rayon Denier Grams/ 9000 m.
General Grains per yd.
1 3100.34 5905.41 8858.11 16535.15 4960.55 0.9 0.0014
100 31.00 59.05 88.58 165.35 49.61 90.0 0.14
200 15.50 29.53 44.29 82.68 24.80 180.0 0.28
1000 (1 Kgx) 3.10 5.91 8.85 16.54 4.96 900.0 1.41
FACTORS FOR CONVERTING YARN NUMBERS FROM OTHER SYSTEMS TO GREX SYSTEM AND VICE VERSA
RECIPROCAL UNITS
GREX NUMBER =
3,100.34 ÷ Woolen run number
4,960.55 ÷ Typp number
5,905.41 ÷ Cotton hank number
8,858.11 ÷ Worsted hank number
16,535.15 ÷ Linen lea number
49,605.50 ÷ Asbestos or glass cut number
10,000.00 ÷ Metric number
To convert Grex to the corresponding units, divide the numerical constants given above by the Grex number.
DIRECT UNITS
GREX NUMBERS =
1.111 x Denier (0.90)
5.905 x Grains per 120 yd. (0.1693)
7.087 x Grains per 100 yd. (0.1411)
19.377 x Drams per 1000 yd. (0.0516)
4.960 x Pounds per 1,000,000 yd. (0.2015)
To convert Grex units to other units, divide the Grex number by the constants given above, or multiply by their reciprocals shown in parentheses.

following additional inherent advantages: (a) Calculations are as simple as in dollar currency. (b) Fractional units can be obtained much more readily than with systems based on pounds, ounces, or grains, and inches or yards . (c) Slivers, tops, rovings, and other large "yarns" can be handled without using large numbers by an extension of the system, using as a unit a Kilogrex = 1,000 Grex (kgx.). (d) Individual fine wool fibers, cotton fibers, and rayon fibers range in fineness from 0.5 to 5 grex, but if numbers are desired to cover still finer filaments without using decimal fractions, a smaller unit, a Milligrex = 0.001 Grex, can be used (mgx.).

Use of any universal, readily decimalized, direct unit, which covers this wide range, would facilitate control of yarn fineness in any spinning mill.

3. The Grex system has three additional unique advantages: (a) It is not now used by any branch of the textile industry, so that no group has to "give in" to any other group in adopting the Grex system. (b) The coined term "Grex" has only one meaning and will not be confused with existing units, such as denier, cut, run, lea, hank, spyndle, etc. (c) The term "Grex," standing for grams per 10,000 meters, is self explanatory.

The accompanying table shows the comparative values for different yarn-numbering systems and gives conversion factors for converting yarn numbers from other systems to the Grex system and vice versa.

DISADVANTAGES OF RECIPROCAL UNITS. Cotton counts, woolen runs, linen leas, and other reciprocal units have large numbers for fine yarns and small numbers for coarse yarns and heavy cords. This has proved to be so unhandy at both ends of the fineness scale that the cotton, woolen, and linen branches of the textile industry have abandoned their reciprocal yarn units in favor of direct units for both heavy yarns and single fibers.

Conversely, the small numbers required to indicate the fineness of cords and other coarse units in regular cotton counts require several decimals, and they have generally been abandoned in favor of "yards per pound." Similarly, since yarn numbers used in the cotton, woolen, and worsted industries cannot conveniently be extended to cover slivers and tops, direct units of grains per yard or ounces per 10 yd. are in common use, and a variety of conversion factors are required. These difficulties would be simplified appreciably and many correlations eliminated by the adoption of the direct Grex system to cover the whole scale from fiber to sliver.

MERITS OF DIRECT UNITS The inadequacies of a reciprocal unit (hank, run, etc.) for research purposes are illustrater by scientific papers published recently.

The textile industry is currently embarking on a greatly enlarged research program, and it is fitting that a universal yarn number be adopted to promote the exchange of information between industries based on different fibers.

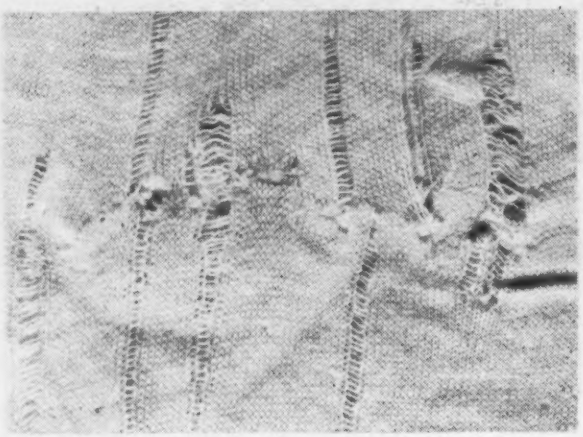
The merits of direct units, of course, are not restricted to research activities. They are real assets in manufacturing operations, and this fact, has influenced men in charge of developments like Nylon, Vinyon, and Fortisan to choose the direct denier unit of measurement, and it may be expected that in further developments, where inventors may use the best system available, direct decimal units will continue to win favor.

From the foregoing, it will be seen that the Grex has much to recommend it. It is direct, it is mathematically simple, it is euphonious, it is based on principles familiar to men in every branch of the textile industry. The advent of new synthetic yarns makes it appropriate that a universal numbering system be adopted as soon as possible; and, as one mill man said, "After the changes and conversions the industry has been through in the last two years, we could change to the Grex system overnight and not lose more than five-minutes' sleep."

Preventing DEFECTS in Circular KNIT GOODS

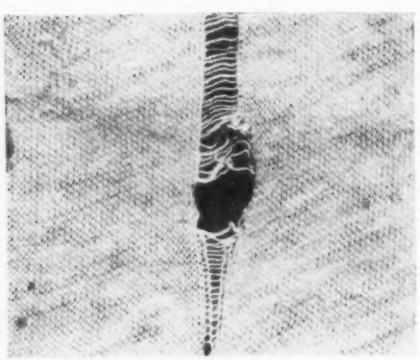
HIGHLIGHTS: Imperfections in Underwear Fabrics Illustrated — Causes, and Remedies for Loose Stitches, Cut Holes, Needle Marks, and Pulled Stitches

LOOSE STITCH

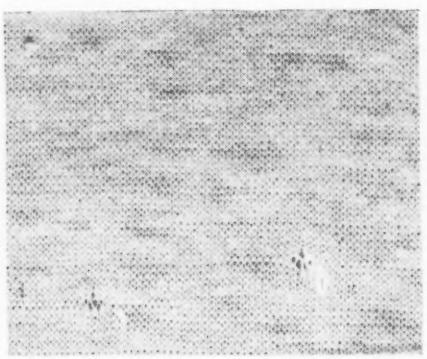


A series of runs, sometimes starting at a hole and running for varying lengths. Causes: Needles out of line. Slubs in yarn sometimes bend needles. Also, needles are bent by excessive yarn tension. Remedy: Straighten needles and replace those that cannot be straightened. Check and clean yarn-tension device.

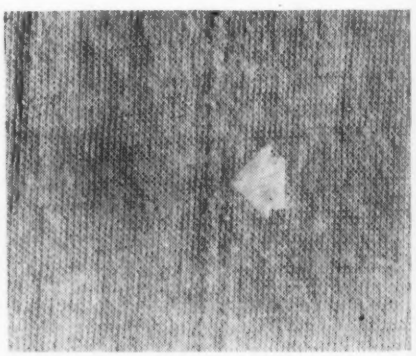
A VALUABLE AID to the knitter is a file of samples of defective fabrics. These samples can be mounted one to a page, in a loose-leaf notebook or on cards. Below each sample should be written or typed a definition of the defect, together with notes on the cause or causes of the fault and the measures to be taken to prevent or remedy it. The defects can be arranged alphabetically, or in some other logical order. After a comprehensive collection of defects has been assembled, the knitter can refer to it whenever a defect occurs, locate a similar defect, and refresh his memory quickly as to its cause and the steps to be taken to overcome it. Some mills have found it well worth while to photograph defective samples, and to build up files of these photographs for various members of their operating and sales staffs. Occasionally it is necessary to intensify the defect before it is photographed in order to have the photographic print duplicate the appearance of the fabric. Other defects were discussed in the August and November, 1942 issues of TEXTILE WORLD.



CUT HOLE—Hole in fabric having appearance of being cut, especially noticeable about the sides. A short run may appear at top of hole, and a long run is generally found at the bottom. **Causes:** A broken needle or a rough cast-off burr cuts the yarn. **Remedy:** Smooth needle and cast-off burr or replace these items.



PULLED STITCH—Very small hole in fabric which appears like a pull. Fabric seldom runs. **Cause:** Slubby yarn or broken needle leaves rough place on stitch burr. **Remedy:** Smooth rough place on stitch burr. Replace broken needle and remove defective yarn from the creel, replacing with a new cone of yarn.



NEEDLE MARK—Fuzzy vertical line appears in fabric. Stitch is uneven and yarn loops are formed incorrectly at intervals. **Causes:** Bent spring-beard needle or needle not pressing off correctly. **Remedy:** Straighten and smooth the needle so as to eliminate this defect; otherwise replace the bent needle with a new one.

Getting the Most from CONTROL INSTRUMENTS

HIGHLIGHTS: Selection and Application of Indicating, Recording, and Control Instruments Discussed at A.S.M.E. Meeting—Electronic Devices Promise Increased Production, Greater Efficiency, and Products of Higher Quality

Cotton slasher in southern mill equipped with Moist-O-Graph for controlling moisture content of warp. Insert shows detecting roll riding on warp at delivery end of slasher.

BY REPRODUCING BEST PROCESS CONDITIONS, supervising operations, and increasing efficiencies, automatic control instruments are helping the textile industry to meet the demands for better products at lower costs. However, casual choice of instruments can result in expensive misapplications. How to avoid pitfalls in the selection and application of indicating, recording, and control instruments was discussed by W. B. Heinz*, and W. W. Starke,** at the annual meeting of the Textile Division, of the American Society of Mechanical Engineers, held Dec. 2, in New York. Present and potential uses for electronic instruments were outlined by Stephen T. Herr.‡ Abstracts of the two papers follow:

Careful analysis should precede the selection and application of indicators, recorders, and controllers, according to Messrs. Heinz and Starke. Questions such as the following should be clearly answered:

1. OBJECTIVES—What long-term instrumentation program is being followed? What is to be accomplished, and how important are the results?

2. MEASUREMENTS—What condition is to be measured?

3. DEGREE OF INSTRUMENTATION OR CONTROL REQUIRED—Is an indication sufficient, or does the operation require a record? Is manual control dependable enough, or does the job need to be done better than a man can do it?

4. TYPE OF CONTROL REQUIRED—On-off, proportional, or automatic reset?

5. POWER MEDIUM—What is the most desirable kind?

6. SPECIAL CONDITIONS—Are there any unusual factors influencing selection?

In order to gain the maximum profit from instrumentation, it is necessary to establish a comprehensive policy for the entire mill. The first step is a survey of existing operations and existing instrumentation, noting particularly their respective conditions and limitations. Working from this survey, a master instrument and control schedule is developed to fill in the gaps, to provide additions where justified, and to program needed rehabilitations and replacements. Once a sound basic policy has been established, its execution can be budgeted, and new instrumentation can fit into the over-all pattern.

OBJECTIVES. Before specifying measurement and control apparatus, the objectives should be correctly understood. Supervisory instrumentation is needed to maintain the quality of the product and the maximum capacity of the equipment. For quality maintenance, the critical factors are the tolerances permitted before the product is affected, the amount of harm possible, the suddenness with which fluctuations occur, and the complexity of demands occupying the operator's attention. For capacity maintenance, by reducing variations to a minimum, and by reducing the human element, it is possible to operate equipment at its maximum rate. Conservation objectives include savings in manpower; in material; and in services.

Other considerations may indicate

* Consulting Engineer, Bound Brook, N. J., representing the Cochrane Corp.
** Assistant Plant Engineer, Forstmann Woolen Co.
‡ Brown Instrument Co.

the use of instruments and controls. Among these are the reduction of safety hazards, records for accounting purposes, and data for rate setting. Savings, in operations are possible by general plant instruments, such as water-condition analyzers; instruments for testing and adjusting equipment; and instruments for operational analysis, such as the stroboscope.

A tabulation of objectives for a typical textile operation is shown in the accompanying table. In most instances it is difficult to predict quantitative savings for any one installation, and the engineer must use judgment based on his knowledge of the operation. Where there are a number of units, a trial installation can furnish data for a subsequent complete instrumentation project.

Several different conditions may vary during a process operation. It is important to identify the condition whose measurement gives the best guidance to an operator or the most effective actuation of an automatic controller.

DEGREE OF INSTRUMENTATION. A simple operating indicator, such as a pressure gage, thermometer, or speedometer, is frequently sufficient. In operations where trends are simple and fluctuations are slow, occasional observation by the operator permits the necessary adjustment. In some instances secondary instrumentation by an indicator is installed for trouble shooting. Recorders are used on important or more complex operations where a historical record is desirable; they are particularly useful where measurements are constantly fluctuating and a correct average condition is to be maintained. Integrating instruments are of principal value for accounting records, such as steam, electricity, or water consumption. Recorder-controllers (or corresponding indicating controllers) should be used whenever the best control performance is wanted.

Where operations are critical, and where the sensitive element is exposed to damage or corrosion, a separate indicator should be used as a check instrument.

Use of automatic control is indicated in the following cases:

1. Regulating functions require almost constant attention.
2. Fluctuations are too rapid for manual control, or so slow and complicated that an operator cannot foresee what he must do for a future correction.
3. Regulating device is too large or requires too much power for manual control.
4. Lapse of operator's attention would cause substantial loss in quality or capacity.
5. Operating labor can be saved or lower-grade operator can be used.
6. When control should be centralized.

The engineer must always check for special conditions influencing the selection of instruments or control. Questions, such as the following, should be considered:

1. If control is to be pneumatic or hydraulic, will the air or water supply fail or be shut off at times? Is air or water supply clean enough?
2. If the controller or its power supply should fail, what should the action be to avoid damage or hazard in the process?
3. If some other element of the operation should fail, is any special response required by the controller?
4. Is control point to be changed frequently by the operators, or should setting be done by supervisor only?
5. How important is operation and how reliable must controller be to avoid production tie-ups? Should emergency controls or protective devices be used to back up the primary controller?
6. Will operation function for many years or only a few months?
7. Has the maintenance service sufficient skill to service controllers?

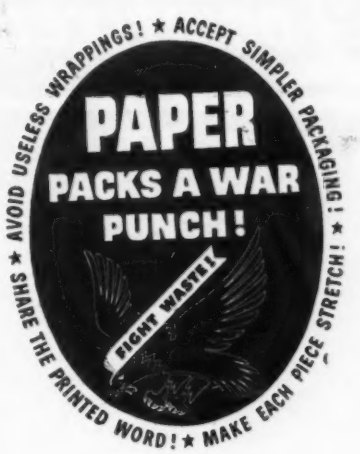
(*Continued on page 130*)

Objectives for Instrumentation and Control in Textile Drying Operations

		SUPERVISORY OBJECTIVES		CONSERVATION OBJECTIVES		
Operation	Kind of Instrument	Quality Maintenance	Capacity	Manpower	Material	Steam, Water, Electricity
Air Temperature	Automatic Control or Indication	Avoid over-temperatures	Avoid under-temperatures	Reduce operating attention	Reduce possibility of material damage	Avoid over-heating
Humidity of Drying Air	Aut. Control of Makeup Air or Indication of Humidity in Dryer	Maintain optimum conditions	Permit higher feed end temperature and avoid excessive makeup air	Reduce operating attention	Reduce possibility of material damage	Avoid heating up excessive makeup air
Rate of Travel of Material	Aut. control or Indication of Speed of Conveyor	Avoid over-drying	Adjust to most efficient speed	Reduce operating attention	Reduce possibility of material damage	Savings by efficient operation
Moisture content of delivered material	Moisture indication or control	Avoid over- or under-drying	Adjust to most efficient operation	Reduce operating attention	Reduce possibility of material deterioration	Savings by efficient operation
Air Circulation	Manometer		Maintain full air flow	Indicates clogged screens		Savings by efficient operation
Steam Supply	Pressure Indication		Indicate supply shortcomings			

1,000,000 Tons of Paper MUST Be Saved!

HIGHLIGHTS: Voluntary Economy Avoids Restrictive Orders—Textile Industry Can Play Important Role—Notes on Conserving Fiberboard and Office Stationery


★ AVOID USELESS WRAPPINGS! ★ ACCEPT SIMPLER PACKAGING! ★ MAKE EACH PIECE STRETCH! ★ SHARE THE PRINTED WORD!
PAPER
PACKS A WAR
PUNCH!
FIGHT WASTE!

WPB is initiating a voluntary drive to save paper through individual economy instead of by restrictive orders which might work hardship on particular business enterprises. The 1944 objective is the saving of 1,000,000 tons of paper.

The slogans (and the precepts) are: "Paper Packs a War Punch! Avoid Useless Wrappings, Accept Simpler Packaging, Make Each Piece Stretch, Share the Printed Word."

In the textile industry, paper is a prime essential of the business. Goods are labeled, packed and wrapped with paper. Business correspondence, orders and records are on paper. Lack of paper would virtually close a mill. How could it operate without letterheads, purchase forms, sales contract forms, time cards, payrolls, employment records, billheads, ledgers, memoranda, specification and manufacturing records, etc.?

Production of wood pulp, paper's basic raw material, has been cut by manpower shortage and transportation limitation. Much of the wrapping paper and fiber board used for military supplies, Lend-Lease, etc., goes out of the country never to return as waste paper for reworking. A strenuous effort now to reduce paper consumption is the only way to make the available supply cover the essential uses.

Magazine publishers are effecting a 25% cut in paper utilization by reducing trimmed size, cutting paper weights, etc. WPB has already issued 15 orders controlling paper as a raw material and as a printing medium. To quote a recent WPB release: "Magazine and newspaper and book publishers have gone beyond these orders to stretch their paper supplies." The Government itself is taking its own medicine and conserving upward of 25% of its annual use of paper for all purposes.

Success of this new conservation program will, with the concurrent paper salvage drive, help solve the paper problem and prevent a crippling over-all cut in civilian use of paper.

The important part which textile mills can play is evidenced in the fact that the country's total paper consumption is estimated to be 50% for containers, 25% for printing and publishing, and 25% for miscellaneous. In every mill an immediate survey with view to economy should be undertaken covering all paper and fiber board containers with plans for reuse.

HOW TO CONSERVE: In conserving paper board in packaging and shipping, the Government urges that consideration be given the following points:

1. Redesign of containers to approximate a cube, which ordinarily represents the most economical shape from a material standpoint. When a single tier of units has resulted in a long flat container, where practical use 2 or 3 tiers with a smaller base dimension.
2. Adjustment of the number of units per case to the maximum practical.
3. Conversely, reduction of the number of units to utilize lighter carton board when such reduction will result in less paper tonnage over-all. Be sure that the openings are on the smallest dimension of the shipping container, so that the flaps will have the smallest area possible.
4. Eliminate small sizes and samples whenever practical.
5. Do away with individual cartons wherever possible.
6. Explore the opportunities for reusing old shipping containers.
7. Eliminate in every practical instance the use of gift or holiday boxes when the products are fully packaged individually.
8. Eliminate all unnecessary overlapping of covers and closures.

There are limitless ways each manufacturer, going wholeheartedly at the job of container conservation, can save paper. The WPB has asked industry leaders and trade-association heads to map out suggestions for their groups.

For business stationery there are five paper-stretching methods suggested: (1) Getting the "most" out of each sheet of paper; (2) Using the lightest practical weights and the more readily available papers; (3) Using smaller sizes or changing formats; (4) Reducing spoilage and waste; (5) Eliminating waste in inventories and in distribution.

Among specific suggestions for getting the most out of a sheet of paper are the following:

1. When a business letter is answered, the carbon of the answer could well be the reverse side of the original letter; saves file space as well as paper. Reuse carbon paper often.
2. Paper used on only one side can take the place of new paper for interoffice communications, memos, scratch pads, etc.
3. In typing letters, eliminate wide margins, use single space, make one sheet do the work of two.
4. In all offices, competition among employees and executives to see who can discover a new trick for saving business paper, will result in unforeseen savings.
5. If a letter will do the job of a folder, use a letter and save paper. If a postcard will do the job of a letter, use it and save paper.
6. Plan printed material to fit standard package units of paper. Buying and using standard package units save spoilage and handling. Use standard-size envelopes.
7. Revise and prune mailing lists. Don't use precious paper on deadheads.
8. Reduce inventories of stationery all along the line down to the user's desk.

WOOL SECTION—Chapter XVI (Continued)

PROTECTOR MOTION——By Eugene P. Schremp

THE PLUNGER SPRING, Fig. W36, August issue of Textile World, can be compressed by inserting a pinch bar between the face of the plunger and the knock-off lever. When this has been done the lever may be pulled out of the casting. Plunger springs should be replaced when they have lost their tension or become broken.

Protector rod springs are adjusted by turning the collar on the rod. The collar is turned only enough to obtain sufficient tension to keep the fingers in contact with the binders. Too much tension will cause excessive wear on the face of the protector finger at the box side. This may cause the finger to break off at the top and catch under the binder and cause a serious warp smash. Excessive spring tension will also cause the binder to choke the shuttle as it enters the shuttle box. On the other hand, too little protector rod spring tension may cause the rod to swing down or bounce and not protect when the shuttle is improperly boxed. Protector rods must be free and not bind at any point. If the rod becomes bent it should be removed and straightened at once. End and center rod stands should always be lubricated to prevent excessive wear.

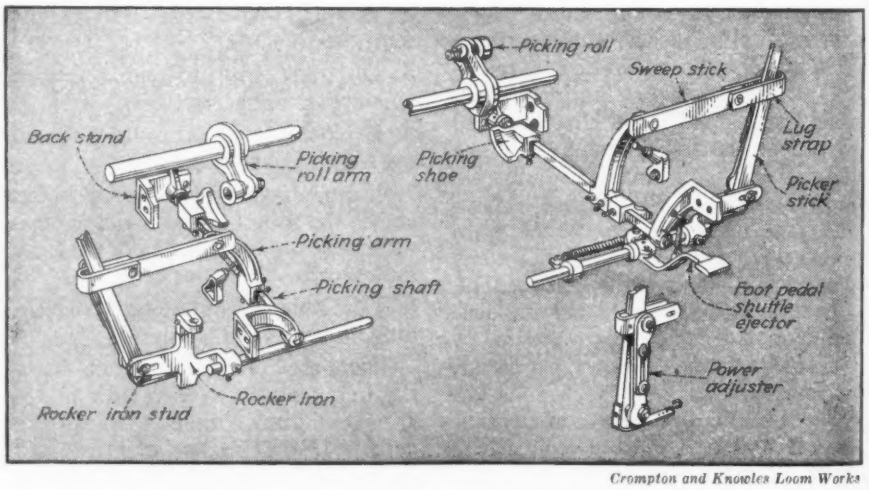
Chap. XVII—Picking Motions

A TYPE of picking motion used on the W-2 and W-3 Crompton and Knowles woolen and worsted loom is shown in Fig. W37. This motion is designed to be mechanically as near perfection as possible. To maintain a high degree of efficiency, certain settings and adjustments are fundamental. While limited variations are permissible, it must be understood that extreme adjustment may result in unsatisfactory operation and undue wear, and if frequent replacement of picker stick and other parts is necessary, it will be evident that maladjustment exists in the motion. Fixers, after mastering the fundamentals, have no difficulty with this motion.

Picker sticks are usually made of hickory. The grain of the wood should run slightly towards the center of the stick so that when the picker wears into the stick it will not split from top to bottom. Pickers should always be replaced before they wear into the rivet. If a loom is allowed to operate with a picker in such condition the rivet will cut into the picker stick and cause the stock to split or render it worthless when a new picker is installed. If, for some reason, the picker has cut into the picker stick only slightly, the stick can be shaved even with a draw knife or a sharp pocket knife. Pickers sometimes have a hard spot which will cut into the picker stick and render the picker stick worthless in a very short time. If this condition occurs the picker should be removed and the hard spot cut away with a file. Rivets and lagscrews are sometimes used to prevent the picker stick from splitting at the rocker stud. If rivets are used, one should be used above the hole and one below. With lagscrews, the usual practice is to put one about one inch above the rocker stud hole with the head of the lagscrew on the inside. One of the most frequent causes of picker sticks splitting from the rocker stud hole, is caused by the sweep-arm stop adjusting screws allowing the sweep stick to come back too far and strike the picker stick a blow at each pick of the loom. This adjusting stopscrew should be adjusted so that there is at least an inch between the end of the sweep stick and the inside of the picker stick.

Lug straps are made of fabric, of leather, and in some cases where the loom runs at slow speeds, wooden lug straps are used. To insure maximum life, the lug strap should be installed so that it does not bind at the picker stick. It is also important that large washers or special clamps be used on the bolt that holds the lug strap to the sweep stick; otherwise, the bolt will cut into the strap.

Sweep sticks which connect the picking arm to the lug strap are of wood or fabric. The end which connects the picking arm is usually reinforced with rawhide or fiber. Some mills use a leather end on a slotted sweep stick so that if the picker stick catches it will pull out and not damage the picking motion or shuttle box. A slotted sweep stick should only be used on looms equipped with a brake and not on the older type of equal geared, pick and pick looms. Without a brake the loom will turn over, but if for some reason the sweep stick pulls out, a shuttle smash will result. When the loom is equipped with a brake, it will stop automatically when the shuttle does not leave the box.



Crompton and Knowles Loom Works

Fig. W37. Picking motion on W-2 and W-3 looms.

FIXING Hosiery MACHINES

CIRCULAR MACHINES—Chapter XVIII (Cont.)

SPLIT-FOOT MACHINE——By Julian W. Hughes

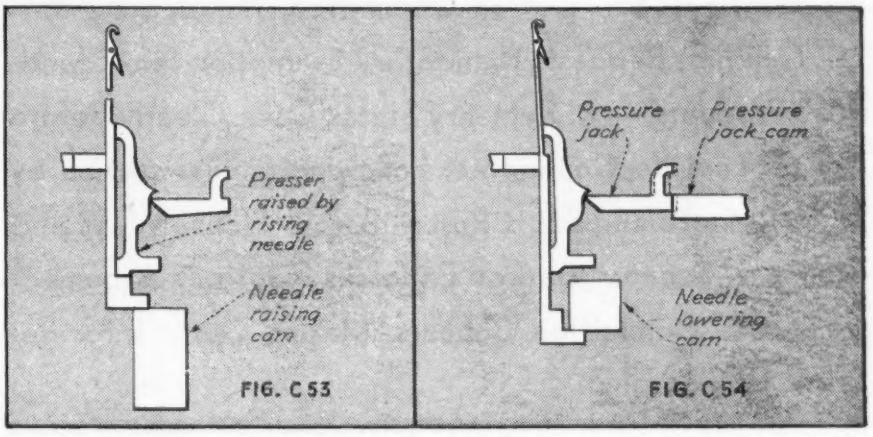


Fig. C53. Needle has been raised by needle raising cam. Fig. C54. Needle has been lowered, but presser jack and cam holds needle in reverse plating position.

HOLDING the fabric to width is only a secondary purpose of the sleeve as its primary purpose is to affect the equalization in size of the knitted loops upon the two portions of the fabrics, namely, the portion knitted at what is usually known as the main feed and the portion knitted at the auxiliary feed. In the formation of split-foot work, the short butt needles knit at the main feed and the long butt needles knit at the auxiliary feed. At this auxiliary feed, the short butt needles pass without knitting under the knitting cam of this auxiliary feed and the result is a tendency to unduly lengthen the loops or stitches that were knitted upon the short butt needles at the main feed.

Customarily, a heavier yarn is knitted in at the main feed than at the auxiliary feed. It was discovered that in the early split foot machine, this heavier yarn was strained at the auxiliary feed when the butts of the short butt needles passed underneath the knitting cams. To overcome such objection, the knitting cams of the auxiliary feed are set at a slightly higher level than the corresponding knitting cams of the main feed. It will be understood, therefore, that the short butt needles at the main feed are drawn downward to a lower level by the cams of the main feed than that between knitting cams of the auxiliary feed. To affect the equalization of the loops upon the two portions of the fabric, a sleeve is provided which, at the auxiliary feed rocks the sinkers for the long butt needles only, so as to lengthen the loops formed upon the long butt needles and thus equalize them in length with the loops formed upon the short butt needles.

Because the sleeve and vertical slides produce very little friction during the knitting of hose, this mechanism requires little lubrication. However, lubrication of these parts must not be neglected. A few drops of very light oil once a week is required. If the oil is heavy, or an excessive amount applied it may oxidize and gum. An occasional drop of oil placed on the lips is advisable as there is slight friction between the lips and the slide elevating pins. At overhauling the sleeve and slides should be scoured with gasoline.

Chap. XIX—Needle Reverse Plating

A REVERSE PLATING mechanism is applied to several Scott & Williams models; namely, to the "HH" and the "K" series. Method of controlling needle deflection for reverse plating on these models will be considered.

CONTROL OF PLATING. When the NRP method of needle reverse plating is applied to the "HH" and "K" models, the pattern controlling mechanism used is practically the same as that employed on the model HH Spiral. That is, a selector drum with 96 tricks or jacks is used and these jacks are arranged to actuate 25 selector fingers. These fingers, in turn, control the pattern jacks under the needles on the cylinder by contacting a series of butts on these pattern jacks. Originally, these cylinder jacks had 26 butts, the lowermost butt being for the purpose of separating the needles during the makeup and transfer and hence is never removed. The other 25 butts are for controlling the plating. When regular plating on a certain needle is desired, a butt corresponding with one of the selector fingers is left on so the pattern jack will be depressed. That jack will not raise the needle high enough to be deflected. A butt on the pattern jack is cut out when the needle is to reverse plate, hence the selector finger does not depress it. However, on the NRP method of reverse plating the right-hand stitch cam is not withdrawn as is the case on the 25-Spiral machine.

The butt on the pattern jack is cut out so there is a gap large enough for the corresponding selector finger to pass through it without depressing the jack farther into the needle slot. Consequently, the pattern jack remains out far enough to be acted on and elevated by the lower jack cam. When the jack is raised its needle is likewise raised high enough for the needle butt to be contacted by the needle rising cam, Fig. C53, which raises the needle still higher. As the needle is being raised by the cam it raises the presser to a point where the presser jack passes over the hump on the presser, as shown in the illustration. The needle is immediately lowered again by the needle lowering cam, Fig. C54, and the presser is held in a raised position by the presser jack. The needle is then lowered to the proper level to receive the yarn at the throat plate and the presser and its presser jack still remains in position to deflect the needle when acted on by the presser jack cam.

Textile Industry Takes RENEGOTIATION

HIGHLIGHTS: Cotton Committee, Headed by Russell T. Fisher, Requests Mandatory Exemption for "Standard" Products — R. E. Henry States Case Clearly Before Senate Finance Committee, Following Similar Action by H. W. Moore and Scott Russell Before House Ways and Means — Senator George Endorses Industry's Argument — Senate Committee Concurs, Making Outlook for Reforms Encouraging

By GLADYS MONTGOMERY
Washington Editor, TEXTILE WORLD

THE TEXTILE INDUSTRY presented its case against renegotiations to the Senate Finance Committee on Dec. 2 through Robert E. Henry, president of Dunean Mills, Greenville, S. C. He urged the committee to change the amendment voted by the House so that exemption from renegotiation of contracts for the manufacture of commercial products in mass production and sold under OPA price ceilings would be *mandatory* instead of left to the discretion of the Board. Later in the month the Finance Committee voted in favor of such exemption.

Mr. Henry pointed out that under the Renegotiation Act what constitutes excessive profits and also the amount subject to recapture is left to the discretionary judgment of different men, some of them wholly inexperienced. "The injustice of the present law, which recaptures profits, arbitrarily determined, from mills producing for the war effort, and leaves untouched the profits of competitors producing the identical product for civilian consumers, will be continued under the proposed law [as drawn up by the House]."

Arguing that there was never any need for applying the renegotiation law to the textile industry, Mr. Henry explained that cotton mills were always on mass production and the volume of Government buying resulted in no material change in manufacturing process.

"In 1939," he said, "the total production of fabrics was 9,100,000,000 sq. yd. In 1942, production amounted to 12,400,000,000 sq. yd., an increase of 36%. This increase was accomplished without any increase in productive capacity; it was, in fact, done with 2,140,000 fewer spindles than in 1939. We increased production by changing operations from two to three shifts a day and lengthening the work week."

Military fabrics of this industry are basically the same as the commercial fabrics it had been producing on a mass-production basis for years, he added. When changes were necessary, they were not of a material character and the costs involved were predictable with reasonable accuracy by both the procurement officer and the contractor.

In such an industry, Mr. Henry contended, renegotiation is "nothing less than the imposition of another tax law—a tax law that does not apply equally to all industries and all companies within an industry, a tax law where provisions are not clearly defined after careful debate by Congress, but are applied with the discriminatory judgment of individual men."

In addressing the Senate Finance Committee, Mr. Henry acted in his capacity as a member of the Cotton-Textile-Industry Renegotiation Committee established by four major associations—the Cotton-Textile Institute, the Association of Cotton Textile Merchants of New York, the American Cotton Manufacturers Association, and the National Association of Cotton Manufacturers. Russell T. Fisher, president of the last-named association, is chairman; and other members of the committee include Howard Baetjer, president of Mt. Vernon-Woodberry; Allan Barrows, president of Gosnold; Donald Comer, chairman of Avondale (with Hugh M. Comer, executive vice president, as alternate); Harvey W. Moore, executive vice president of Brown; Saul F. Dribben, president of Cone Export & Commission; and A. F. Bonsal, partner of Joshua L. Baily. Scott Russell, formerly president of Bibb, was originally a member but resigned when he left Bibb to become counsel to the Senate postwar planning committee.

Mr. Fisher and other representatives of the industry are laudatory about the work which Mr. Henry, as already noted, accomplished before the Senate Finance Committee and which Messrs. Russell and Moore accomplished earlier before the House Ways and Means Committee.

Challenging a statement by the War Department Price Adjustment Board's representative that textile costs had declined steadily from the date at which OPA ceilings on finished textile products were fixed, Mr. Russell said, "We are using 3,000 more people to operate three shifts than in normal times because of the decreased efficiency of that labor."

An interesting example was given by Mr. Russell of a WPB order setting aside 20% of a certain type of loom to make bag cloth to compensate for deficiencies in jute imports. Some of the bag fabric thus made was sold to the Corps of Engineers, and on these sales the mills knew they would face renegotiation; some was sold to bag manufacturers, and the mills knew the business would not be renegotiated; some was sold to the Defense Plant Corp., and the mills thought it would not be renegotiated, but Congress passed a law including this Government corporation in renegotiation and making its business renegotiable retro-

COMPLAINTS to Congress

actively for 18 months. There were three different profit ratios on the same fabric in this instance.

Mr. Moore said that his firm had accepted the renegotiation settlement proposed, which was for a refund of $10,000 on Government business of $550,000 out of total 1942 sales of $4,000,000. The actual cost to his firm of this refund was only from $1,600 to $2,000, he said, plus about $750 for accounting expenses, since $8,000 of the $10,000 would have been taken by the excess-profits statute.

The profits of his mill were 9.73% on civilian business after taxes and 9.53% on Government business after taxes and before renegotiation, Mr. Moore stated.

The committee was moderate in the scope of its request. In the words of Dr. Claudius T. Murchison, president of the Cotton-Textile Institute, "We did not ask for repeal of the law; we did not ask for favored treatment for industry alone; but we were asking for exemption from renegotiation for those enterprises producing standard commercial articles with long production experience, the cost of which is readily available at the time the sale is made."

The Senate Committee's three-fold definition of a standard commercial article is broad enough to cover almost everything except tactical goods. It includes any article now manufactured and sold as a competitive product by more than one manufacturer; any article for which a maximum price has been set by OPA or which is sold at a price above the Jan. 1, 1941, selling price.

What business and industry can anticipate from overhauling of certain other details of the contract renegotiation procedures is a way short of repeal of the renegotiation statute, as advocated by Senator Walter F. George, of Georgia, but something stronger than the House rider. The House rider, however, will be the pattern.

Under the House bill, a contractor or subcontractor with contracts involving less than $500,000 in a single year will be exempt from renegotiation (the amount is now $100,000). A member of the Price Adjustment Board estimated that 25 to 30% of textile Army contracts fall in this group.

The House rider specifies that a subcontractor will not be liable to renegotiation if his prime contractor is not. Further, a subcontract is redefined to apply only to subcontracts for article, work, services, building, structure, improvement, or facility contracted for under a prime contract or the supply parts appearing in the finished articles. The Senate Committee approved this definition and made it retroactive to April 28, 1942.

The House bill extends exemption to agricultural commodities in their raw or natural state, or in some cases

(Continued on page 142)

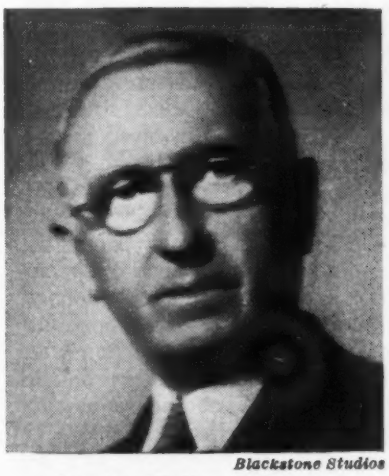
Textile Views Endorsed By Senator George

I have been asked by a representative of TEXTILE WORLD for my views of renegotiation from the standpoint of the cotton-textile industry.

Enactment of the renegotiation statute came as the result of two wartime necessities—first, the production at top speed of many new articles for which no cost experience had been heretofore established; and second, the need for production of large quantities of items that had been produced in such small amounts that the previous cost experience was wholly inapplicable. These conditions never prevailed in the cotton-textile industry—nor, for that matter, in many other industries. This industry has been engaged for many years in mass production of standard articles primarily for civilian consumption. Wartime products are essentially the same with no increase in the productive capacity of the industry.

There is an additional fact. Not only throughout the war, but for many months previous to the war, the industry has been operating under OPA ceilings. The first ceiling was imposed in May, 1941, at a time when the industry was already operating at 121.7 percent of two-shift capacity; and between this time and the time that industry production reached its peak level, practically all of its products were put under price ceilings. This gave OPA all the necessary facts to ascertain costs at peak production. Fabrics sold to the Government have been sold at ceiling prices or below.

The House authorized the Price Adjustment Board to exempt, in its discretion, contracts for the manufacture of standardized commercial articles, if normal competitive conditions affecting the sale of such articles existed. The Senate committee made mandatory what the House left discretionary.



Blackstone Studios

Senator Walter F. George

Walter F. George
U. S. Senator from Georgia, Chairman, Senate Finance Com.

Textile Workers Press for Wage Increases

HIGHLIGHTS: Textile Workers Union Wants at Least a 10-cents-an-Hour Increase —Washington Recognizes That Higher Wages Will Require Higher Prices

FROM SPORADIC REQUESTS for wage increases, which in several instances have been granted, the demand of the textile workers throughout the industry for pay raises has now assumed sweeping proportions, with the Textile Workers Union of America taking part in CIO's frontal attack on the "Little Steel" formula.

In this situation, the textile industry finds itself more or less in a squeeze between price ceilings on the one hand and increasing production costs on the other. The picture is further complicated by the fact that textile wages are considered to be substandard in many instances, a condition that will be further aggravated if living costs continue to rise as a result of an unfavorable outcome to the subsidies controversy. "Without consumer subsidies," War Mobilization Director Byrnes said, "the cost of living will rise. If that happens, we will be unable to resist new wage demands."

Despite the many complications, the outlook for a satisfactory adjustment is far from hopeless. All elements of the issues involved are receiving careful consideration in Washington. The War Manpower Commission recognizes that low wages are injurious to the industry from the standpoint of its ability to keep employees and to maintain production schedules. A report of the national Labor-Management Policy Committee dealing with manpower problems made on Dec. 7 at the request of Paul V. McNutt, chairman of WMC, contains a recommendation for "the provision and expansion of sound, adequate, and satisfactory wage and hour conditions of employment." The Office of Economic Stabilization, which is the overall guardian of the price-and-wage citadel, recognizes that ceilings are not sacrosanct and that they can and should be lifted under certain conditions. These conditions are admitted to exist as regards many vital textile commodities.

As was to be expected, the overhauling of price ceilings is being approached with the greatest of caution on a piecemeal basis. Economic Stabilizer Fred Vinson in his "incentive" program has paved the way for an adjustment in ceiling prices on certain essential civilian goods, especially low-cost goods, in order to encourage increased output. WPB has been directed to determine what goods should be produced in increased volume and to make plans for obtaining the added output; OPA has been empowered, under certain conditions, to revise existing price schedules to afford a stimulant for production. This action may allow in turn for some of the wage increases already demanded by textile unions which present ceilings do not warrant. At the same time, Judge Vinson warned of various new restrictions and demands on producers whose overall profits are regarded as exceptionally high.

Quick ceiling adjustments can be expected in denims for work clothing and in chambrays for work shirts, also in sheetings. OPA is said to be working on price ceilings for rayon linings, diaper cloth, and certain infant's wear.

Recently OPA has issued several pricing amendments that coincide with Judge Vinson's directive. A provision for adjustable pricing permits sellers to accept orders for cotton goods at prices to be adjusted later if OPA makes changes in existing ceilings, and a similar provision issued for denims and chambray work clothes for Navy allows sellers to benefit by price increases in effect at the time of delivery.

Action on the wage front is even less definitive than that in the price field. The overall workers' viewpoint is represented by the position taken by the TWU in its demand for a general wage increase of not less than 10 cents an hour for its 600,000 members in the cotton-rayon branch of the industry. It has also announced that a similar demand will be made by the union for wool, synthetic-yarn, carpet and rug workers, and other textile employees.

Uniformity of wages will be sought so that all workers doing the same job in the same industry will get the same pay.

"With the cost of living rising rapidly, with workers frozen onto their jobs at frozen wages, the 'Little Steel' formula cannot be permitted to impair morale, health, and efficiency of those who are engaged in production vital to the war effort, among these the textile workers", according to Emil Rieve, general president of TWU. The demands will be presented in the course of collective bargaining; and, if an understanding is not reached, each case will go to the War Labor Board.

In the final analysis wages and prices will be determined by Government. The attitude of the responsible agencies is being carefully watched. As an indication of the way in which the WLB may be expected to react to certain problems common to the entire industry, it is important to give attention to a recent decision establishing a 50-cents-an-hour minimum rate for experienced employees in the cotton-garment-industry shops under contract with CIO's Amalgamated Clothing Workers. A majority of the more than 500 companies involved in the case agreed with the union on the desirability of establishing the 50-minimum rate; 50,000 workers are employed in shops covered by this case.

The Board's order directed a minimum rate of 50 cents an hour for workers with six or more months' experience and a 45-cent rate for those with three months' experience. The 40-cent minimum as set under the Fair Standards Act still applies to workers with less than three months' experience.

The union's request for industry-wide minima in occupations above the minimum rate was turned down, since it is the policy of WLB to deal with local market areas rather than on an industry basis. Wage increases allowed by the Board's directive require the approval of Vinson and may require some adjustments in price ceilings.

G. T. M.

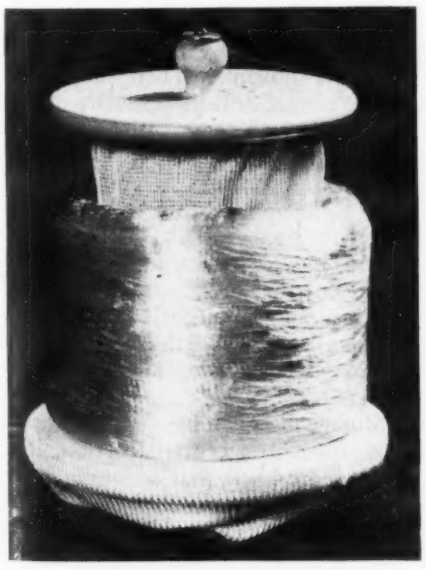
TEXTILE Equipment NEWS

MACHINERY AND SUPPLIES

Cake Yarn Holder

Developed for use in rayon throwing mills handling cake yarn, is the simplified "Cake Yarn Holder," manufactured by Freeland Spool & Bobbin Corp., Hazleton, Pa. This holder may be used for cake winding, reeling, coning, doubling, copping and warping. Once installed, it is stated, changes from yarn of one denier to another may be made without variations in set-up.

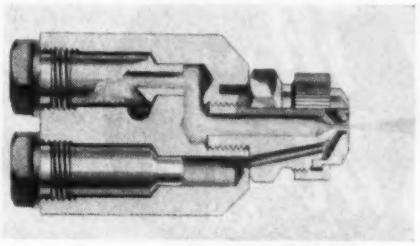
Standard acetate and rayon cone holders will accommodate the cake holder in either a vertical or horizontal position. Copping from cakes may thus be accomplished, in place of cones, using these holders without mechanical changes to the creels. Run-out drag on the yarn is reduced and virtually eliminated because of the very smooth surface of the cap edge. Spring tension is controlled automatically by a fiber insert. A knitted covering keeps the yarn from contact with the holder, eliminating the possibility of snagging. Each holder is provided with a wrap-around washer on top of the knob so as to save time in locating the yarn end.



Simplified "Cake Yarn Holder" permits throwing plants to change from cones to cakes without extensive creel variations (Freeland)

Pneumatic Atomizing Nozzle

A nozzle for humidifying in which water and compressed air are mixed externally to produce a round spray, has been developed by Spraying Systems Co., Chicago. This spray may be projected from 10 to 20 ft. from the nozzle, depending on air pressure used in the humidifying system.



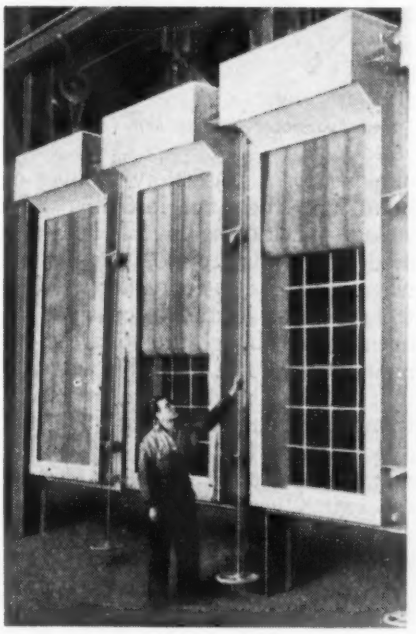
Nozzle for humidification systems (Spraying Systems)

The nozzle is a complete unit in itself. Two monel metal strainers—one for air, the other for water—are included right in the body. This permits easy removal of the strainers for cleaning or replacement without disturbing the nozzle or lines. Also, it eliminates possibility of clogging the nozzle orifice by pipe scale or other dirt loosened by accidental jarring of lines.

Curtain Type Damper for Boilers

To assist in conservation of fuel in industrial power plants, the Heacon curtain type damper has been introduced recently by Thermix Engineering Co., Greenwich, Conn. The damper is so designed that it can be installed in existing power plants without extensive alterations. The design of the damper is shown in the accompanying illustration.

The curtains are manufactured from a wide range of materials to satisfy any desired temperature condition or range of temperatures. The lower loop of the curtain carries a riding roller of liberal radius which raises the curtain on and off the grill with no sliding motion. Bearings are sealed against dust; and dust does not interfere with the operation of the self-cleaning roller.

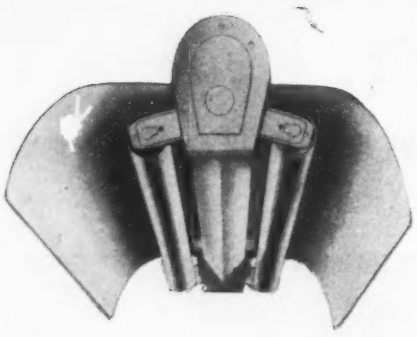


Curtain type damper (Thermix)

The damper is said to prevent operating difficulties usually encountered, due to conditions of leakage, when one boiler is shut down on a common breeching. The operating mechanism is readily connected to combustion control systems, assuring accurate control under exacting and difficult conditions.

New Fluorescent Lighting Unit

An instantaneous starting fluorescent lighting unit, Model MF-240-N, has been developed by Fostoria Pressed Steel Corp., Fostoria, Ohio, which is suitable for use in textile mills. This model eliminates the use of starting switches and cuts down maintenance costs resulting from their replacement. Also, it eliminates blinking of lamps when their life is near an end. Instead, the lamps will operate without



New fluorescent lighting unit (Fostoria).

blinking for a satisfactory number of hours and then fail instantly. Low voltage operation is possible with this model and this feature is important where there is a fluctuation in line voltage. This unit will continue to operate even though the voltage drops momentarily 50%. Lamp life with this unit is considered satisfactory, even though lamp manufacturers state that a reduction of as much as 50% in life may be expected. Elimination of starting switch costs, however, help balance any decrease in lamp life which may be experienced.

This model operates on a power factor of 98% at 118 volts and is corrected for stroboscopic effects. It is designed to accommodate two 40-watt fluorescent lamps mounted on 5 in. centers and is built to conform to Bureau of Standards recommendations. Non-metallic reflectors are removable from the top without interrupting lamp operation. When the reflectors are removed, all wiring in a "V"-shaped channel is exposed to full view, permitting rapid repairs when necessary.

Useful Accessories for Textile Mills

Stencilling ink for marking cartons, wooden boxes, burlap, etc. for shipping has been developed by Diagraph-Bradley Stencil Machine Corp., St. Louis 8, Mo. It is stated that this ink dries instantly and requires little pressure in applying to the stencil. Also, there is no building up of ink on the brush and as the ink remains in suspension all of it may be used without heavy sludge settling in the bottom of the ink pot.

An automatic centrifugal clutch of the engaging and self-disengaging type, has been developed by Amalgamated Engineering & Research Corp., 100 W. Monroe St., Chicago 3, Ill. This new clutch can serve either as a coupling between shafts or as a driving pulley or gear in a transmission or as a starting cushion between power units and driven mechanisms. The new unit works equally well in either direction and may be set to engage or release at a given speed and to slip in case of overload. The clutches are built in all sizes in capacities ranging from ¼ to 500 hp. and may be used for varied purposes.

Diesel engine generator sets with a capacity of 15 kva are being manufactured in a solid injection, compression ignition, two-cylinder unit by Climax Engineering Co., Clinton, Iowa. This unit has a maximum rating of 22 hp. The motor is available without the generator and a clutch may be used for pulley drive, with or without clutch and reduction gear or auxiliary power take-off. Another model, a four-cylinder unit with a maximum rating of 44 hp., is also being manufactured. This unit, when used for power generation, can be used to power a 30 kva generator.

An indoor dry-type transformer for primary circuits ranging from 601 to 15,000 volts is being offered by General Electric Co., Schenectady, N. Y. This type of transformer has the outward appearance of an air conditioning unit. The grill replaces the screen type enclosure formerly used. It is stated that this type enclosure provides through circulation of cooling air. Easy access is provided to the high-voltage terminal. The transformer is so designed that it can be installed in dead space between pillars of a building or in out-of-the-way corners about a factory floor.

MILL MAINTENANCE

TO KEEP 'EM RUNNING

Lengthening Useful Life of Packings

Maintenance men are frequently called upon to repack pumps and other pieces of equipment about dye houses and in the power plants of textile mills. Besides reducing the period over which a piece of equipment is non-productive while it is being repacked, such critical materials as: rubber, cotton, asbestos, lubricating oil, graphite, flax, jute, rayon, wood fiber and various metals are being used, according to an article appearing in a booklet entitled "First Aid to Industry in Conserving Rubber," published by United States Rubber Co.

Reduction in the consumption of any of these types of packings will result in that much more material to perform the tasks we have before us.

Selection—Careful choice of packing is perhaps the most important feature of obtaining the optimum life in service. While it is true that it is best to have exactly the right packing for each application, it is also possible that in a lot of cases many nearly identical packings can be eliminated by standardization throughout a plant on a relatively small number of types.

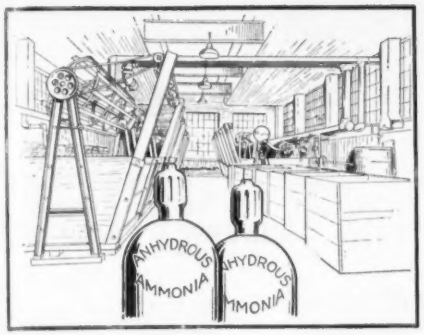
Furthermore, standardization of this sort simplifies procedure and saves considerable time consumer in maintenance duty. Centralization of packing supply aids in this standardization, often brings to light unknown cases of duplication or near duplication in inventory.

The purposes of conservation will usually be served by the use of the best packing obtainable and not by considering initial cost as an index of efficiency.

Lathe-cut gaskets should be selected whenever possible. Their production entails a great deal less of waste of material than is the case with gaskets cut from sheet.

Standard packings in coil or spiral form are adaptable to a wide range of different sized installations. In the correct types they are just as efficient as the cut ring sets which can be used only on specific pieces of equipment. Standardization on the former type will help in the achievement of smaller stocks.

Storage of Packings—With all packings stored in a central location, it is much more likely that adequate facilities will be put in to maintain the stocks in first class condition. A cool place free of dirt and grit should be selected. Racks or shelves should be provided so that sheet packings can be handled without danger of tearing.



A textile mill, by careful selection of packing, saved two cylinders of ammonia in the dyehouse by eliminating leakage.

Rod packings should be purchased in strong, durable containers which will not only protect them from dirt and grit but will also guard them against parching and drying of their lubricants.

A more efficient use of sheet packings will be achieved if a control is arranged to see that only a sufficient amount is issued at one time for the particular job at hand. In fact, it is even better if gaskets can be cut in the stock-room where centers and ends can be saved for other uses.

Preparation of Equipment—An examination of equipment before repacking often discloses worn, scored, or pitted moving parts which are seriously reducing the life of the installed packing. Have such parts replaced or refinished and a remarkable increase in packing life can be expected. Maintenance of performance records will often indicate the need for such servicing. Also, it may bring to light situations where a seriously short service life is being obtained because the wrong packing is being used.

BATCH FORMULAS FOR MIXING WHITE LEAD PAINT FOR EXTERIOR WOOD WORK

	National Lead Co. Recommended Formulas*				Fed. Specification TT-P-156		F.H.A. Technical Circular No. 6	
Materials	Priming Coat	Body Coat	First Coat Repainting	Finish Coat	Finish Coat	Alternate Finish Coat	First Coat	Finish Coat
Soft Paste White Lead, Lb.	250	300	250	300	300	300	300	300
Raw Linseed Oil, Gal.	10	4½	5	9¾	9⅜	....	4½	8
Boiled Linseed Oil, Gal.	....	....	....	....	....	9¾	....	....
Turpentine, Gal.	5	4½	5	....	....	....	1½	1⅛
Liquid Drier, Pt.	2½	3	2½	3	3	....	3	3
Varnish, Gas	....	....	....	....	....	....	2¼	....
Raw Umber, Pt.	....	....	....	....	....	....	¾	....
Yield, Gal.	23½	19⅛	18½	19⅞	19½	19½	18⅜	19¼

*Boiled linseed oil may be substituted for the raw linseed oil called for in these formulas. If boiled oil is used, omit drier.

Mill maintenance men frequently mix paints in large quantities. Ordinarily, formulas for mixing white lead paint are based on the use of 100 lb. of paste white lead, according to an article appearing in a recent issue of *Dutch Boy Quarterly*, published by National Lead Co. The quantity of paint produced by such formulas usually varies from 6 to 9 gal., and such batches are frequently too small for use about mills. Listed in the accompanying table are several standard formulas which should aid mill maintenance men in mixing white lead paint in 20-gal. batches.

Check Your Electrical Equipment

Regular inspection will reduce repair time which, under war-time conditions may extend over a considerable period of time because of the inability to obtain spare parts. A Maintenance Check Chart for electrical equipment, issued by Westinghouse Maintenance Sales, division of Westinghouse Electric & Mfg. Co., contained in part, the following instructions:

WIRING

Keep Wiring in Safe Condition—Examine monthly where vibration exists. Keep lock nuts and bushings tight on conduit, cables and other raceways. Protect wire from oil and water. Keep open wiring tight, insulated and safe from mechanical injury. Inspect all wiring once a year.

Check Extensions and Drop Cords—Examine every three months where use is heavy. Check closely where wire enters socket, plug, switch, etc. Replace or repair excess wear promptly. Keep drop cords away from nails, metal hooks, etc. Always keep lamp guards in place.

Keep Switch, Junction, Fuse and Panel Boxes Clean and Tightly Covered—In dusty locations, clean out weekly. Keep covers and unused "knockout" plugs in place. Inspect monthly.

Suggested belt inspection forms.

FUSES

Check Size—Twice a year inspect all fuses to determine that circuits are not overfused.

Keep Fuse Clips Clean and Tight—Check connections to prevent overheating and breakdown.

Maintain Refillable Type Fuses—Replace charred casings. Keep fuse assembly tight. Refill with links at the same rating as the casing.

Keep Fuse and Switch Cabinets Tight—Prevent escaping sparks when fuses blow by plugging unused knockouts. Always keep doors tightly closed and secured.

Belt Inspection

Leather belts should receive a periodic inspection, just as other items of textile equipment. Following are points taken from a booklet on power transmission, published by Cling Surface Co., that should be inspected: (1) loosening of laps or plies, (2) for dry condition, (3) laces tearing loose, (4) for oil soaked condition, (5) misalignment of pulleys and shafting, (6) cracks and tears, (7) improper tension, (8) excessive or worn pulley crown, (9) weaving of belt, (10) accumulation of dirt, (11) whipping or slapping, (12) slippage.

Kinks AND SHORT-CUTS

A $25 WAR BOND FOR YOUR IDEA

A $25 War Bond will be awarded each month for the most useful "kink" published in this department. This contest is open to all readers of TEXTILE WORLD, and there is no limit to the number of entries any one person may make.

Contributions must be received not later than the last day of the month to be eligible for the award for the second succeeding month. Items may pertain to production methods, mill engineering, safety, cutting costs, improving quality, speeding up production; in brief, any little device, stunt, kink, or short-cut which you have tried out in your own mill and which you believe will be helpful to other mill men. Items should contain sufficient detail to permit other mill men to utilize the ideas in their own operations. Previously published material is not eligible for the award. Judges of the contest are the editors of TEXTILE WORLD.

TEXTILE WORLD shall have the right to publish any item submitted. Items which are published will be paid for at our regular rate for this type of matter with extra payment for appropriate sketches or photographs. The sketch you submit need not be a finished drawing.

Sign your contribution with a pen name if you wish to preserve complete anonymity, but include your real name and address as evidence of good faith and to permit payment for items published.

Contributions should be addressed to: Technical Editor, TEXTILE WORLD, 330 West 42nd St., New York 18, N. Y.

★ THIS MONTH'S PRIZE WINNER

Special Template Simplifies Fabric Weight Calculations

Textile men that use templates for cutting swatches from fabrics to determine the square yard weight of the goods often use a template measuring 12 x 12 in., or 1 sq. ft. In the last 20 years the writer has used many kinds of dies and templates and has concluded that the most practical and convenient size of template is one that equals 1/10 of a square yard. This size allows the multiplication of the swatch weight by 10 to get the ounces per square yard. By using this decimal multiplication of the swatch weight, speed is attained and error lessened.

To make such a template, first determine the area in inches of 1/10 of a square yard and take the square root of that to get the dimensions of the template. The calculations are as follows:

$36 \times 36 = 1296$ sq. in., or 1 sq. yd.

$1296 \div 10 = 129.6$ sq. in. or 1/10 sq. yd.

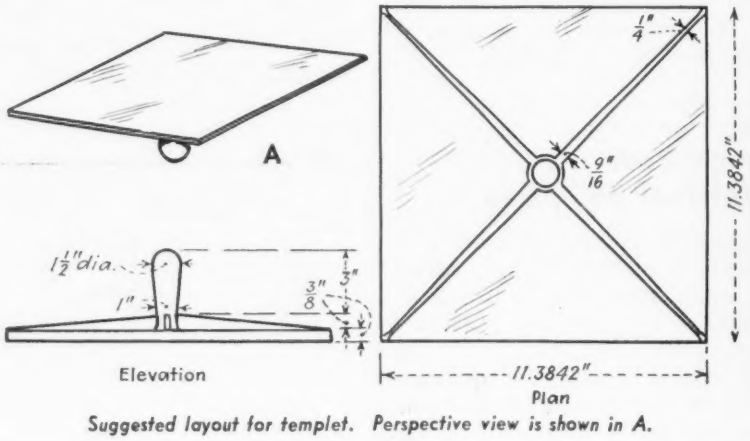
$\sqrt{129.6} = 11.3842$ in. for each side.

Next make a template 11.3842 in. sq. and attach a handle to the center of the top side. The template can be made of steel plate or cast as shown in the illustration. The face of the template should be finished smooth, and the dimensions of the sides made as nearly as possible to 11.3842 in.

To use the template, place it on the cloth not too near the selvage, hold it firmly by the handle, and cut the cloth along the sides of the template with a very sharp knife. Then the swatch is weighed. The square yard weight is obtained by moving the decimal point one place to the right, which multiplies the weight of the swatch by 10 as shown.

Example: Sample 1/10 sq. yd. weighs 1.060 oz.

$1.060 \times 10 = 10.60$ oz. per sq. yd.—Raymond Mitchem, *LaGrange, Ga.*



Suggested layout for templet. Perspective view is shown in A.

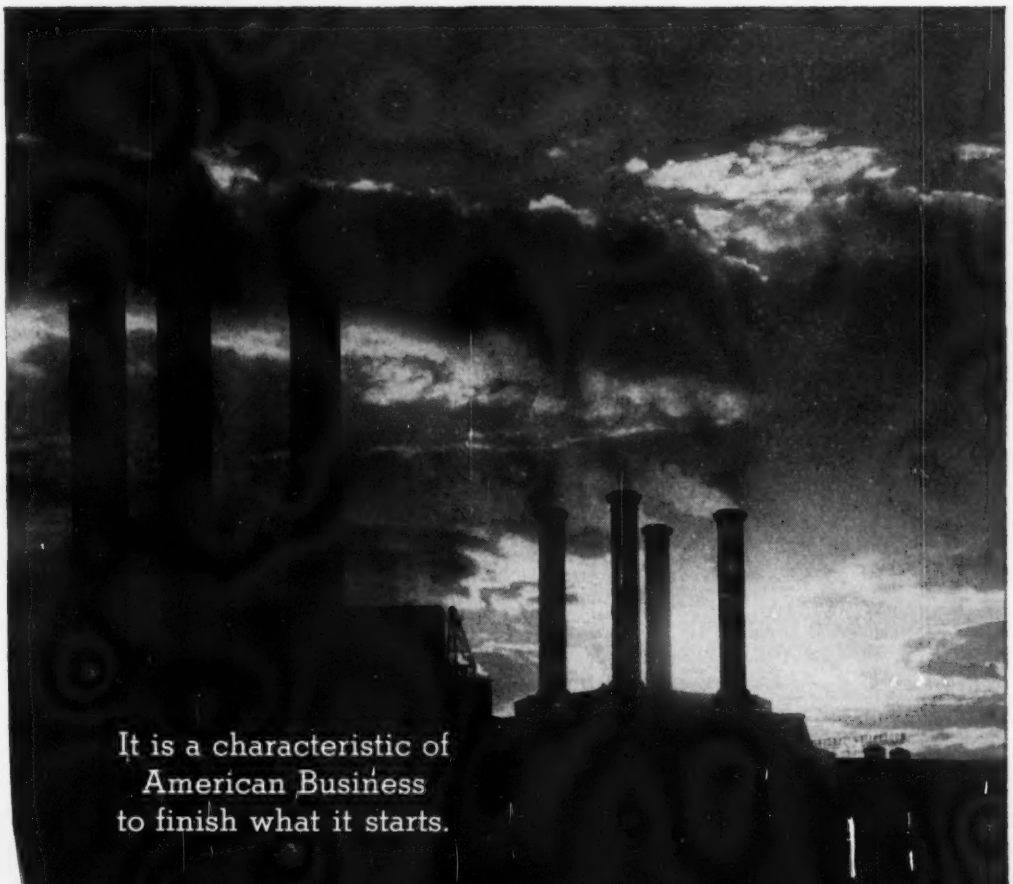
Weaving Fuzzy Acetate Warps

Fuzzy or hairy warps, especially with 55 and 75 den. acetate rayon, cause much trouble during weaving by constantly stopping the loom. This condition persists even when warps have been slashed. The usual solution, employed by most weave-room foremen, is to stop weaving and pull from the warp a yardage of rayon sufficient to remove that section that is excessively fuzzy from the shed.

Such a remedy is very expensive.

(Continued on page 100)

Seeing things thru



It is a characteristic of American Business to finish what it starts.

American Business knows that when war production has truly succeeded the war will end—and with it war production.

To see this thing through requires looking into the post-war period—now. Perhaps then will come the biggest test of all—the test of our American System of Free Competitive Enterprise.

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KINKS & SHORT-CUTS

(Continued from page 98)

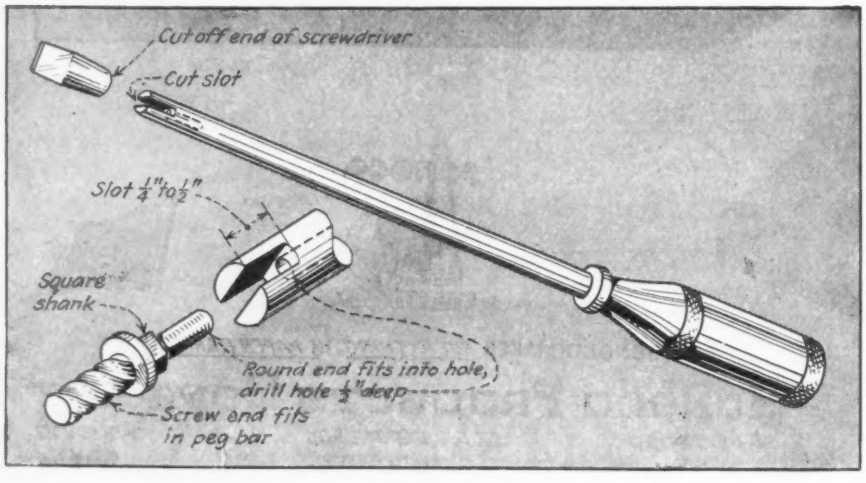
Oiling the warp yarns by an improvised method has, in actual practice, permitted the loom to continue in operation when such a condition exists, eliminating the necessity of wasting large yardages of warp yarn. Essentially, this method consists of soaking a paper towel in coconut oil and placing it on the warp ends behind the harnesses. The oil will tend to reduce the liveliness of the yarn and lay the fuzz. Care must be exercised not to apply too much oil as the size will be washed off the warp. Also, the reed dents and heddles will then cause bad warp-streaks.—G.E.S. (Pa.)

Make a Dobby Peg Wrench From Screwdriver

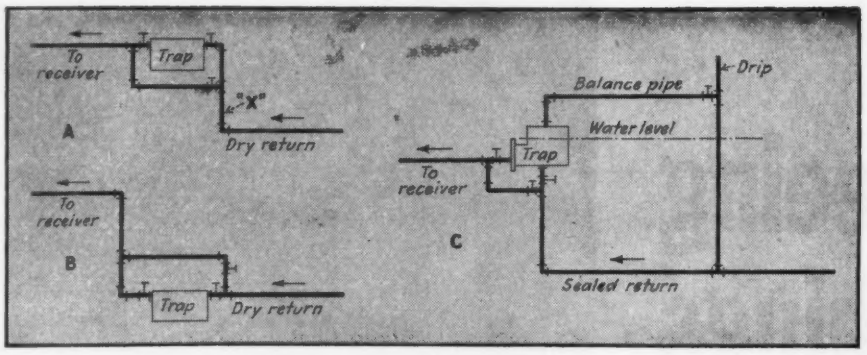
Loomfixers may add another peg wrench to their kit, one with a long shank which is superior to the ordinary short-shank peg wrench by simply altering a long-handled screwdriver.

To make this wrench take a long shank screwdriver that is no longer usable or that has the bit worn down or broken off. Cut a few inches off the end, leaving the handle and at least a 6-in. shank; drill a hole through the shank ½-in. from the end and cut a slot through the center, as shown in the illustration. This cut will form a square to fit over the dobby peg shoulder. Finally drill a hole into the shank end ½-in. depth to fit the round peg.

As peg lengths in some loom dobbies differ, the peg is fitted into the peg wrench and adjustment made in the length of the cut. Also, at the time of drilling, correct sized bits are used to obtain an exact peg fitting. The tool, when used, never should be forced over the peg in a tight fit as it may split the peg bar when trying to remove the wrench from the peg. At the same time, a loose fit must be avoided, otherwise when removing a peg the shoulder will be burred, allowing the tool to slip.—H.E.W. (Pa.)


Cut off end of screwdriver
Cut slot
Slot ¼" to ½"
Square shank
Round end fits into hole, drill hole ½" deep
Screw end fits in peg bar

Dobby peg wrench from screwdriver.



Diagrams showing arrangements of steam traps to prevent water hammer.

Preventing Water Hammer in Steam Pipes

Several times the writer has been called upon to investigate troublesome water hammer, which was found to be due to a wrong location of a steam trap. The arrangement most commonly found in cases of this kind is shown at A, in the accompanying diagrams, in which a "dry" return line is drained through a trap placed above it. The reason for this method of connection may be because the return is carried close to the floor, or the trap will be more accessible if elevated above the pipe line.

Theoretically the arrangement shown at A should work successfully, since after the trap has discharged, the steam it contains will condense when sufficient water has collected in the return line to form a seal at the point "X." This condensation causes a vacuum in the trap, which will soon suck up the water in the return, and the steam pressure following it will cause the trap to again discharge, etc. Practically, this is not likely to work so smoothly because the alternate filling and draining of a horizontal return line will usually produce unbalanced pressures, thus causing surging and water hammer. A "dry" return should always be kept as dry as possible, as an accumulation of water in any part of the system, even a small amount, is liable to cause trouble.

The remedy, in cases like that shown at A, is to place the trap below the level of the return line, either by means of a pit or by a rearrangement of the piping if necessary, see *B*.

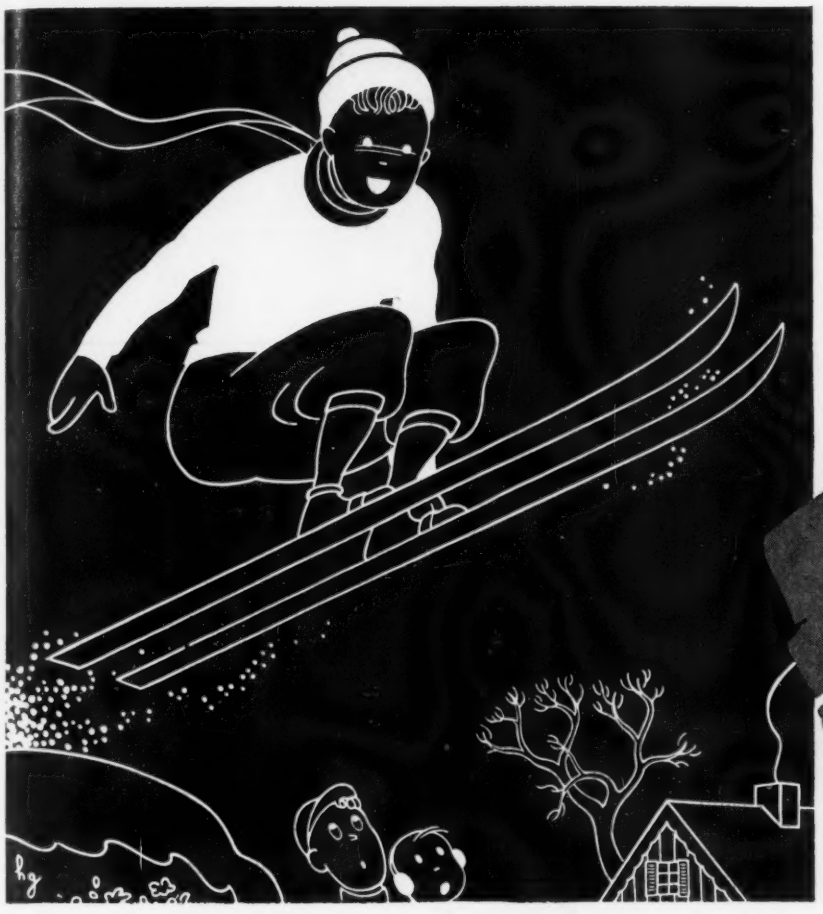
If for any reason it is necessary to locate the trap above the return line, it is usually best to keep the horizontal pipe sealed at all times by making the connections as shown at *C*. In this case a flow trap should be used, as this type gives an approximately continuous discharge.—C.L.H. (Mass.)

Improving Oil-Flow to Bearings

The accompanying illustration shows a better method of getting oil into bearings. At times, when oiling bearings, the oil fails to feed through the hole for the obvious reason that rust and accumulations of carbon residue clog it up. And occasionally, in processing lower grade cotton the lint or fly clogs the oil holes. In any case, the bearings will overheat and burn out, necessitating the replacement of bottom bearing and often the cap.

Enlarging the present hole will often help in feeding the oil through to the bearing, but a better method is to remove the cap and drill two additional holes down through the metal, one on

(Continued on page 102)



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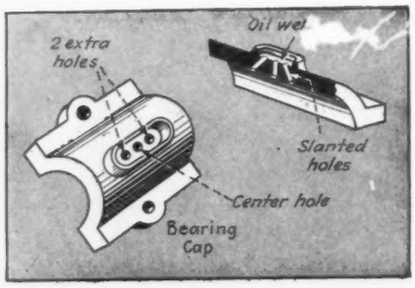
KINKS & SHORT-CUTS

(Continued from page 100)



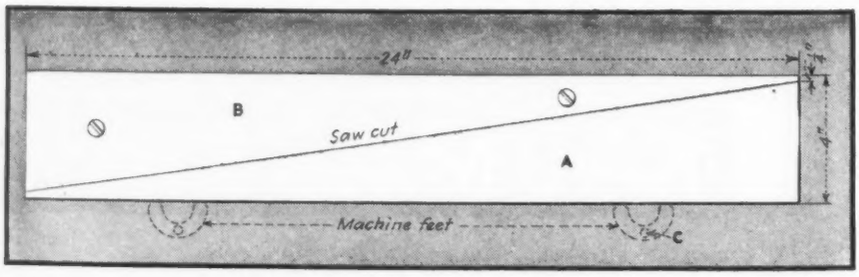
Extra holes improve bearing lubrication.

each side of the present hole—if it is positioned in the center. Oil will usually penetrate through one of the three holes, as all three are not likely to clog at the same time. Furthermore, the holes placed in on a slant towards bearing ends, will feed the ends with fresh oil the same as at the center.—E.C.W. (Va.)

Holding Device for Knitting-Machine Testing

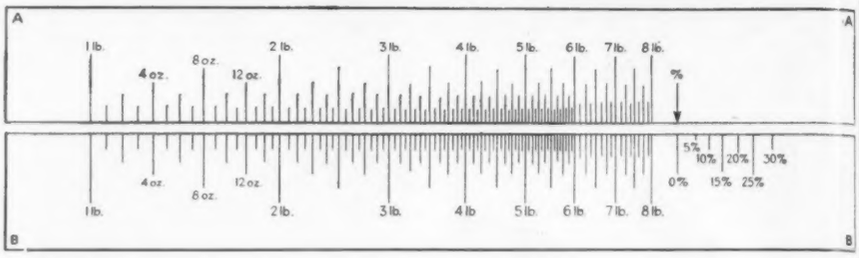
A simple device to hold seamless knitting machines in place while testing with power after reconditioning can be made from a piece of a board of suitable length. For most knitting machines of this type, a 2-ft. board is long enough. It should be sawed and joined as indicated in the ground plan sketch. Section A is left free, and section *B* is secured to the floor with two round-head wood screws—No. 12 is a good size to use. Section A not only serves as a belt tightener which can be quickly moved, but also avoids the damage to the floor which occurs where screws are moved.

To install the holding device, place the machine and put the belt on the loose pulley; pull the machine away from the shaft and driving pulley until the belt is tight enough to show the machine is in proper alignment with the pulley on the driving shaft; then place the sections A and *B* on the floor close up to the back of the front feet of the knitting machine, which are indicated with dotted lines at the front edge of section A. Section A should be from 4 to 6 in. to the left of the position shown in the sketch. Secure section *B* to the floor; then pull the machine forward until there is sufficient tension on the belt to operate the machine; and hold the machine by pushing section A to the left on the floor. It will not be necessary to drive a screw at C, which would mar the floor. The adjustment of section A avoids the movement of section *B* or change of belt length for other machines.—W.A.S. (N.H.)



Device for holding seamless knitting machines under test.

Calculating Grease Weight by Slide Rule



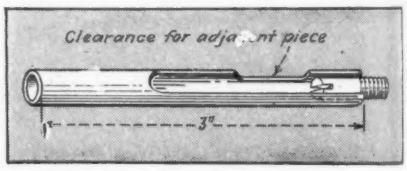
In reproducing the slide rule scales which accompanied the article, "Calculating Grease Weight by Slide Rule," the draftsman made a slight error which affects the calculations. Therefore, the new scales shown above should be employed in place of those which appeared on page 192 of the November issue.

Preventing Box Stains

Box stains spoil quality goods. Steaming, boiling-off, and dyeing will not remove these stains; they are there to stay. A good weaver notices stains on cloth and calls the loomfixer to wash the boxes with cleaning fluid. Sometimes the shuttle may be dirty and should be cleaned carefully with a paper towel. If two shuttles are used, the one that boxes over the other should be cleaned. The paper on the lay may be soiled, or even the laycloth itself, thus causing soiled streaks in the cloth to be classified as box stains. Also, box stains which appear a few inches from the edge of the cloth are usually formed in a small area and can be caused by excessive oil on the picker spindle. Soiled streaks scattered all over the cloth are sometimes incorrectly called box stains while rightly being caused by soiled filling.—S.R.E. (Pa.)

Holder for Headless Screws

Horizontal screws in places not easily accessible on knitting machines can be removed and replaced by the use of a simple holder made from thin tubing. The holder shown in the sketch was made for the screw which maintains the pawl apron, which is spanned by the clutch shipper slide in alignment with the pattern chain on all Model RI, HH, and K, Scott & Williams seamless hosiery machines.—S.A. (N.H.)



Holder for horizontal screws.

Shuttle-Point Protector for Work Bench

Fixers, when polishing shuttles, generally press the shuttle point into the front of a wood or metal workbench, thus damaging the points. If the shuttle is placed in the loom without removing this damaged surface, the warp ends will often be chafed or broken.

Shuttle-point protectors can be made from a piece of scrap leather attached to the workbench or tool

(Continued on page 104)

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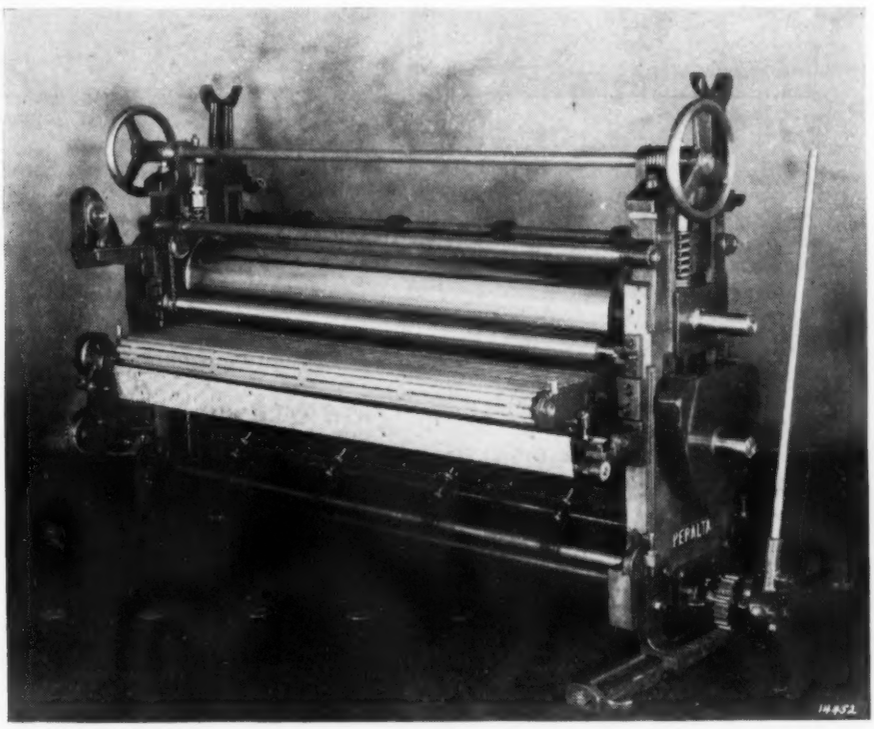

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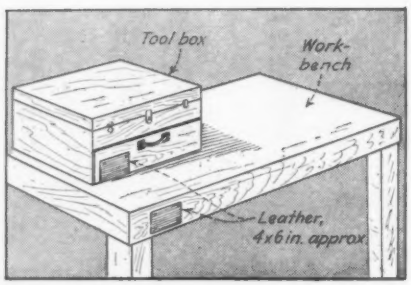
(Continued from page 102)



Shuttle point protector on work bench and tool box.

box. Cut a 4x6-in. piece of 2-ply leather and attach it to bench or box as shown in sketch. The shuttle point is pressed into the leather to hold it in working position for polishing or fitting. This prevents damage to the point through contact with a hard surface. The shuttle-point protector is always ready for instant use. Shuttles can be turned or rotated easily; and as long as the point is pressed against the leather, the highly polished points cannot be damaged.—W.E.H. (*Pa.*)

Swing Front Girt for Cotton Feeders

When fire occurs in opening machines preceding the picker feeders, the burning cotton is frequently carried to the condenser and deposited in one or more of the hoppers fed by the distributor. This cotton must be removed quickly from hoppers to prevent spread of the fire and resulting damage to aprons and cages by setting off the sprinkler heads over the hoppers. With the front girt securely bolted to hopper sides, as regularly installed, it is a difficult task to remove this cotton. The operator must climb over the top of the girt, pick up the burning cotton in his hands, lift it over the top of girt and drop it on floor outside the hopper.

The accompanying illustration shows an arrangement that permits the emptying of all hoppers in a very short time. Finger holes a, Fig. 1, are drilled in each end of the small top girt *A* to make it easy to lift it off the supporting lugs on which it rests. The rake assembly is held in contact with the quadrant by its own weight and may be easily lifted back out of the way.

The large front girt *B* is supported, just above its center, by a length of ¾ in. shafting *b* which passes through holes drilled in the hopper sides. A lever c fastened to the left-hand side of shaft *b* permits the front girt to be swung inwards at the top. This leaves an opening at the bottom through which the burning cotton can be quickly ejected by removing the apron driving belt and reversing the direction of the bottom apron by turning the pulley by hand. This arrangement is very simple and easily applied. It will be noted that there are only two parts added, in addition to the washers, fill-in pieces and screws. This swing front girt will be found useful when changing from one kind of stock to another as it permits easy cleaning. Also, it is of assistance when making repairs or replacements of aprons.

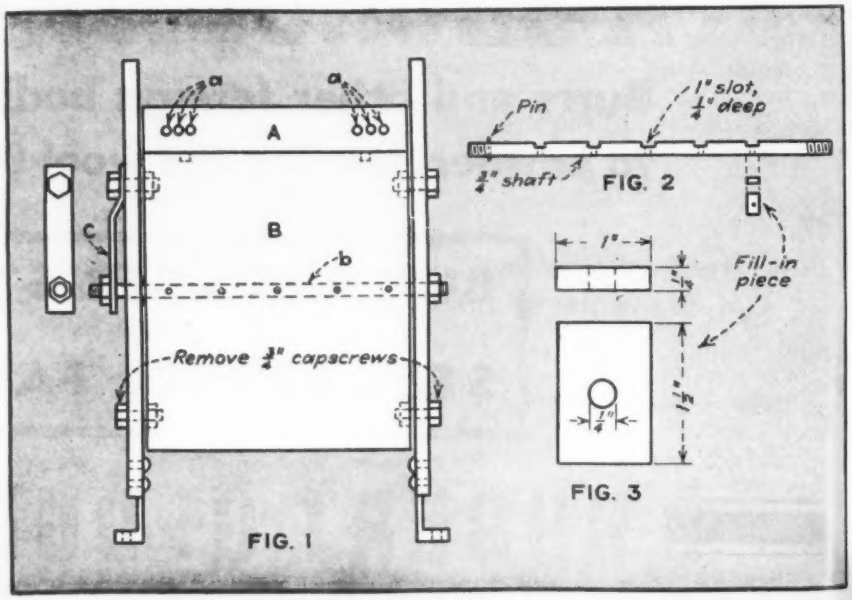
Minor details concerning construction are as follows: One hole is drilled in each hopper side just above the center and at a sufficient distance from the edge to permit shaft *b*, Fig. 2, to rest snugly against the inside of the girt. It will be seen that holes are drilled and tapped in this shaft to take ¼ in. machine screws and slots are filed 1 in. wide and ¼ in. deep for fill-in pieces, as shown in Fig. 3. The shaft is placed through the holes in the hopper sides and holes are drilled in girt *B* to line up with holes in shaft *b* for machine screws. The ¼-in. fill-in pieces are placed in shaft slots, machine screws are put through holes in girt *B* and fill-in pieces and then screwed tightly into tapped holes in the shaft. It is advisable to place thin washers on the shaft between edges of girt *B* and hopper sides. These washers prevent binding of the girt against hopper sides when swinging open.

Bolts that pass through the top of hopper sides into girt *B* are removed. The holes in hopper sides are drilled to clear ¾-in. capscrews and the holes in the girt lugs are drilled and tapped to fit these screws. The bolts at bottom corners of girt are removed permanently, as shown in Fig. 1.

The lever c, shown at the left of the hopper in Fig. 1, is made from ¼-in. flat stock, 1¼-in. wide. It has a hole drilled and key slots filed in top and bottom of the hole to fit on shaft *b*, along with a key pin. The upper end of lever c has a hole drilled to clear a ¾-in. capscrew which passes through the lever and hopper side and into the tapped hole in girt lug. These capscrews that pass through the right- and left-hand hopper sides having ⅛-in. holes drilled through their heads with a hardened pin inserted. This permits screws to be turned out by hand quickly without the use of wrenches.

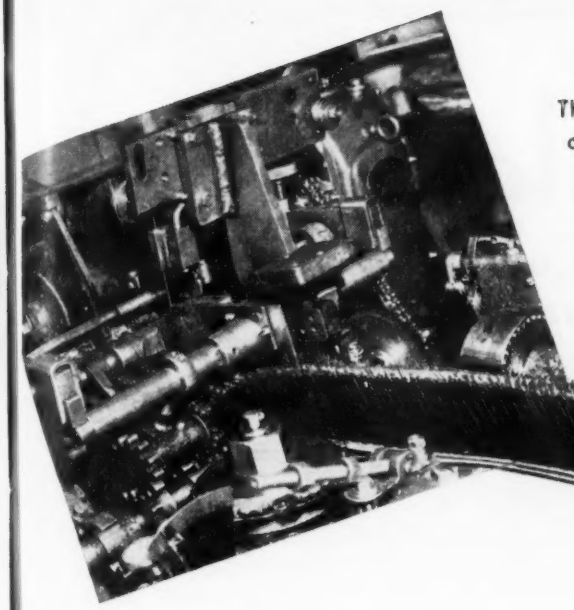
When lever c is moved to the left to open the girt, it is in a horizontal position. A hole is drilled in hopper side opposite the hole in upper end of the lever and a screw is passed through the hole in the lever and hopper side and screwed into the lug on the girt, thus locking the girt securely in a horizontal position.

The angle girt, which is generally attached to the bottom of the girt or to the hopper sides, may be removed entirely or it may be attached to the girt in such a position that it will clear the apron when the girt is swung to a horizontal position. If feeder feet are fastened securely to the floor they will maintain hopper sides sufficiently rigid without requiring additional stay rods. —E.H.H., (*Mass.*)



Figs. 1, 2, and 3. Construction of swing girt for cotton feeders.

FULLERGRIPT BRUSH STRIPS
are made on a machine like this..



The brush material is centered over a ribbon of heavy-gauge metal and held in place by an anchoring wire and roll-formed into the finished shape as illustrated ①. Thus, as the bristles are doubled under the anchoring wire (hairpin style) and encased in metal under great pressure, permanency is assured.

FULLERGRIPT has a solid, continuous fill of material with no gaps or spaces between the bristles, resulting in much longer life and far better cleaning.

COTTON MILLS *can re-brush their* FLAT CARDS *with* FULLERGRIPT BRUSH STRIPS -

which are shipped pre-formed to the correct degree of spiral (right or left hand). Your own maintenance men can easily mount them to the old brush roll.

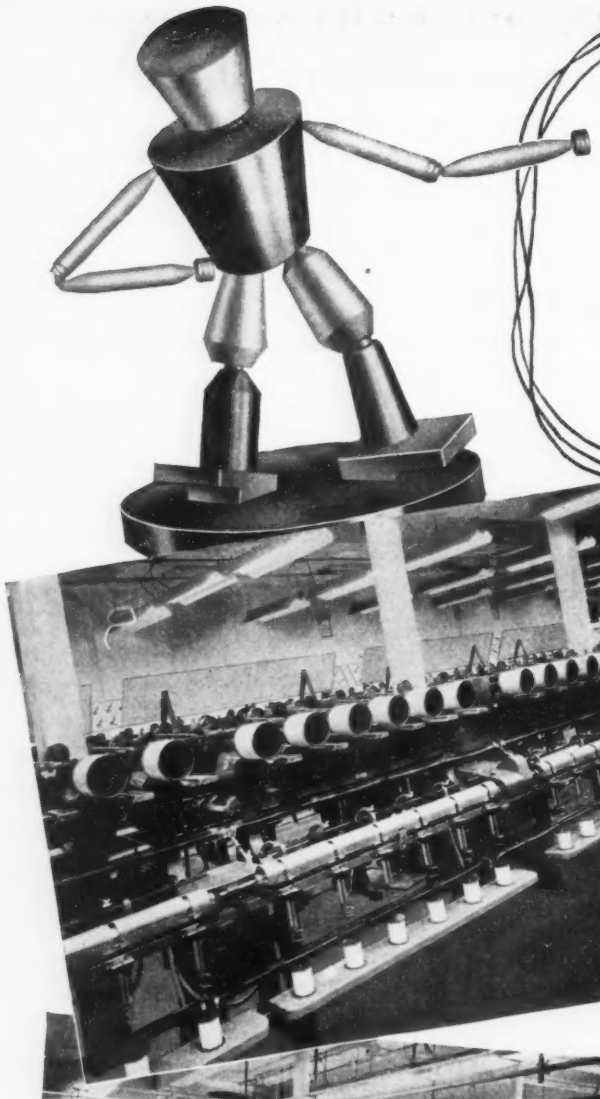
Over 6000 Cotton Card Machines
are equipped with our brush sets and are doing a better job of cleaning card clothing.

This is how your maintenance men renew your worn-out card brushes with FULLERGRIPT STRIPS

Put worn card brush roll in lathe centers. Trim off old tufts of bristles with a sharp knife. ② Sandpaper the roll. Apply two coats of black shellac. Drill screw holes on 8" centers and fasten the spiralled Fullergript Brush Strips with the special screws furnished with each set of strips.

EVERY WEEK **some** ***COTTON MILL*** **in the United States installs one or more sets of** ***FULLER FLAT CARD BRUSH STRIPS***

THE FULLER BRUSH COMPANY
INDUSTRIAL DIVISION, DEPT. 8C, 3594 MAIN ST., HARTFORD 2, CONN.



Atlantic

FINDS THE UNIVERSAL SYSTEM IS THE ANSWER TO SIZING AND CONING NYLON

At the Atlantic Rayon Corporation's modern plant in Lowell, Mass., nylon yarns are being sized and wound with gratifying success on Universal Winding Machines.

SIZING. The Universal Nylon Sizing Machine (No. 250) is of rugged construction, purposely made of simple design, employing a minimum number of moving parts. Vibration is virtually eliminated. Four winds across Traverse limits yarn oscillation.

A special heart-shaped Cam controls all Traverse Guides, alternately lengthening and shortening the traverse to produce a large-diameter tube with tapered ends. This scatter-wind means evenly distributed yarn on the Sizing Tube, thereby contributing to rapid and uniform conditioning.

There is little change in yarn take-up speed from beginning to end of winding — hence almost no change in tension which is applied *before* sizing.

The percentage of size pick-up is always easily and definitely controlled.

CONING. The Sizing Tube is an ideal direct supply for the Coning Machine. No re-draw operation is necessary. The No. 50 Universal Winding Machine with extremely simple Roller Bail Pineapple Coning Attachment for nylon is also designed to keep tension at a minimum. Yarn travels almost in a straight line from the Sizing Tube up past the stainless steel Emulsion Roll through an Auxiliary Tension Guide. Yarn contact points are few.

Pineapple cones are ideal for knitting or warping. Ten distinct shapes may be obtained easily by varying the tapers at the nose and base of the cone.

Universal Winding Company

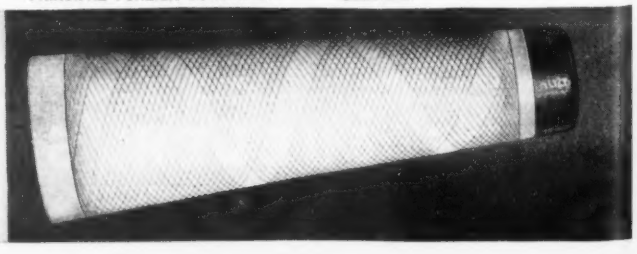
LEESONA

REG. U. S. PAT. OFF. AND PRINCIPAL FOREIGN COUNTRIES

PROVIDENCE
BOSTON
PHILADELPHIA
UTICA
CHARLOTTE
ATLANTA

43-50-5

MORE THAN 90% OF ALL SYNTHETIC FILAMENT YARN ON CONES IS PRECISE-WOUND ON THE FLEXIBLE 50



Pete & Bill

For Better Informed Foremen

Should top management share all its plans with the foremen?

WELL PETE HAVE YOU HEARD THAT THE FRONT OFFICE IS PLANNING TO RUN AN ENTIRELY DIFFERENT LINE OF GOODS AFTER THE WAR IS OVER. IF THAT'S STRAIGHT, I WONDER WHY THEY DONT TELL US ABOUT IT?
LET JACK TELL YOU HOW MUCH HE'D TELL HIS FOREMEN ABOUT THINGS IN THE FRONT OFFICE NOT ENTIRELY CONNECTED WITH THEIR JOBS?
NOTHING AT ALL, PETE, BECAUSE I'D WANT THEM. TO THINK 100% ABOUT THE WORK IN HAND. IT'S THE ONLY WAY TO GET PRODUCTION.
1
I DIDNT THINK IT OF YOU, JACK. I'D TELL MY FOREMEN ALL I POSSIBLY COULD ABOUT OUR BUSINESS POLICIES AND METHODS. WE ARE BETTER FOREMEN FOR BEING INFORMED
NUTS, HOW IN THE WORLD CAN DETAILS ON THE THINGS GOING ON IN TOP COUNCILS AND OTHER DEPARTMENTS HELP MAKE BETTER FOREMEN?
2
FOREMEN ARE ENTITLED TO THAT KIND OF INFORMATION AS REPRESENTATIVES OF MANAGEMENT. WE CAN SPIKE RUMORS BY GIVING THE CORRECT STORY TO EMPLOYEES. WE TAKE PRIDE IN BEING TRUSTED WITH IMPORTANT INFORMATION.
BILL, HOW ABOUT GIVING ME SOME SUPPORT. YOU BROUGHT THIS UP. DON'T YOU THINK PETE IS MAKING US FOREMEN OUT AS TOO IMPORTANT? AFTER ALL, WE ARE HERE TO DO A JOB; NOT TO RUN THE WHOLE BUSINESS.
3
MY CONTENTION IS THAT WE DO A BETTER JOB WHEN MANAGEMENT KEEPS US INFORMED AND CONFIDES IN US.
I DONT KNOW WHO IS RIGHT, FELLOWS. YOU BOTH SOUND CONVINCING. SOMEONE ELSE MUST DECIDE. WHAT DO YOU THINK, READER?
4

LETTERS TO PETE & BILL are paid for when published, without regard to length. We use letters (not over 200 words) discussing material in this department or any other pertinent matter. Contributions of greater than specified length may be given consideration as articles. Suggestions for the Pete & Bill dialogue are also welcome and if used will be paid for. If these pages interest you —contribute something to them to interest others. Address PETE & BILL, Textile World, 330 West 42nd Street, New York 18, N. Y.

LETTERS FROM READERS

Release or No Release

Dear Pete & Bill:

We all know that nobody should change jobs during this emergency while being engaged in war work, or when employed in an essential industry. We owe it to the boys who are fighting the battles that we support them and stand behind them 100%.

Every essential worker who wants to change his job for good reasons must have a release from his present employer before he can change.

But what when the employer lays him off indefinitely and flatly refuses to give him a release, just to be mean? Shouldn't the War Labor Board help this man as he appears before them to make application for a release from his present employer or ex-employer?

The ex-employer may promise over the phone to take the employee back and in reality he only says so in order that the fellow can't claim Unemployment Compensation and must remain 60 days out of work. If these 60 days could be spent in another plant where there may be more war production than in the former plant, wouldn't that help the war effort more?

Some employers who have only little war work get away with hiring help from plants that have almost 100% war orders. Isn't it high time that this unjust and unconstitutional law, which requires you to get a release, should be shelved? (PB 113)

Would Not Tolerate Smoking

"The Worker Who Wants to Smoke" (Pete & Bill, Nov., 1943)

Dear Pete & Bill:

Time wasted by the habitual smoker in the plant goes a long way toward halting production in these crucial days when the country is involved in an awful conflict, when production is so highly important to the successful conclusion of the war, when homes are bereft of their loved ones and hearts of millions of parents are longing for the early and safe return of their sons.

I want to put it in plain, easily understood language—The employee who continually persists in smoking and deters production is the worst slacker imaginable. No one could be a worse slacker. I have given the subject deep thought in recent months, and, were I the foreman of the plant that had these slackers to contend with, I would lose no time in dispensing with them. I would not countenance smoking under any consideration whatever.

I would place, in plain letters, and in plain language, at frequent places about the plant: "*Smokers and slackers are detested here, and will not be employed*": and that would be final.

In a coal mine in my community, even after the State Department of Mines investigated and said there were unmistakable signs of gas, three persons, in a defiant manner, persisted in smoking cigarettes. Because the boss took steps to put an end to the practice to prevent a possible explosion, a strike

was called and nearly 3,000 men walked out of the mines. And these thousands were out for almost a week, with coal so scarce and essential to the war effort.

No one could be a true, liberty-loving American who would halt production in such an essential industry in these times of stress.

I would in no wise tolerate smoking; and the foreman that upholds it should be relegated to the background for all time. (PB117)

Don't Play Ostrich!

"The Worker Who Wants to Smoke"
(Pete & Bill, Nov., 1943)

Dear Pete & Bill:

Employees will smoke during working hours! The severity of rules and regulations, the urgency of pleas, and the seriousness of threats will not stop smoking in the plant. There's no point in playing ostrich. Accept the problem and find the best solution.

Some plants permit smoking at machines and work benches; others, in toilets and in the mill yard; still others insist on "No Smoking".

Where smoking is being done at machines, the fire hazard is increased immeasurably.

Where smoking is permitted in toilets and the mill yard, the fire hazard is increased and many man hours are lost in travelling time.

Where smoking is not permitted, it is being done in toilets, on stairways, in stockrooms and other hide-away places to escape the vigilance of supervisors. This is the most dangerous practice. The offender will drop a lighted cigarette to escape detection and a fire is started.

A fire-proof smoking room is the solution. Management is then assured that all the smoking is being done in one place. It can now enforce the rule "No Smoking in the Plant" because it has provided a place where men may smoke.

It is my opinion that a fundamental of good management is to prohibit only those things that can be enforced. Anything that cannot be enforced should be permitted under proper regulations. (PB115)

Smoking for Doffers Only

"The Worker Who Wants to Smoke"
(Pete & Bill, Nov., 1943)

Dear Pete & Bill:

It is not the problem of who wants to smoke, but who is entitled to smoke, and who in the mill has a job which will give them time off to smoke with the management's consent? The spinning room doffer is the only hand in the entire mill with a rest period that the company knows about, and if he is a smoker, he can then take a rest and smoke.

Perhaps the biggest reason for the smoking problem being a real headache to mill officials is that they know that the doffer is the only man they are paying who has the right to smoke while on the job, and that the others who indulge in it are more or less playing out on the job because every minute is required in some measure to be spent on the job.

Even the doffers should not smoke inside of the mill, including the machine shop and boiler room. A mill with good management will build a smoke house out near the gate and put a sign, "Smoking for Doffers Only" on it. No one should get insulted because they know they haven't the time to idle away. There is one rule that should be made plain to all employees in plain English and that is *no smoking in the mill*, as it is dangerous.

What are you going to do with workers who insist on smoking? Well, if you have a rule that no one is supposed to smoke, see that it is upheld. Just give them a vacation to do their smoking in, and when their heads get dizzy from smoking and they are hungry, they will come back to work and agree to uphold the company's rules.

"To Err Is Human—"

"Correcting Workers' Mistakes"
(Pete & Bill, Oct., 1943)

Dear Pete & Bill:

Most people respond more readily to helpfulness, good fellowship, and kind expressions, rather than to a "bawling out" from the foreman. In most cases a bawling out would likely develop a spirit of unrest, perhaps of

MEMORIES OF OLD MAN CARELESSNESS

By MARTHA B. PITTENGER

No. 12—WAR JITTERS

My record book is filling faster since the War. Where formerly I couldn't get a person in a careless mood, I can now by worrying their minds about their loved ones who are in service. I dangle before their eyes gruesome pictures, which give them jitters; at times they don't even know what they are doing.

This was true with a man who had three sons in service. I was watching him closely one day. He was walking to his job, sort of in a daze, he hadn't had a letter from the boys in a long time, which made him more susceptible to war jitters. I made him think about what might be happening to them that very minute and as he went around the corner he fell over a truck handle, taking a hard fall. The result was a broken arm, which took him away from his job for months.

If I hadn't been so bent on causing accidents, I could have offered him a swell idea—that is to help the boys at the front by doing his job even better now then ever before, because those at the home front are needed just as greatly as those on the war front.

I could have told him too, that no news is good news, and when disaster befalls our loved ones the Government informs us, so until then he, like all the others, should stay in good spirits, and give of their very best.

hatred, against the boss that might, in time, bring about some disruption not to be so easily forgotten.

Use good judgment in giving advice to the employee, if a little something goes wrong. Be pleasant always, be genial and kind. We are all human; if we err, we are not prone to go right on and err again.

"To err is human; to forgive, divine". The boss should consider this trite old adage when a little something occurs with the employee, or he goes wrong, thoughtlessly.

Remember also the fact that we all have but one life to live, and through the most of that life we travel along the same road. (PB 116)

BOOSTING EMPLOYEES' *Morale*

Naumkeag Adds 84 Members

Officials of Naumkeag Steam Cotton Co. sponsored a banquet on Nov. 20 to honor over 300 members of the Pequot Quarter-Century Club. The affair was held in the large cafeteria located on the first floor of the spinning mill. This year 84 new members became eligible. Peter F. Carbone, director of industrial relations, acting as master of ceremonies, introduced the officers of the company and those with long service records who were seated at the head table. These latter included Ernest R. Boyd, corporation clerk, with the company 54 years; Harry S. Perkins, 51 years; George Laclerc, 54 years; Joseph Caron, 54 years; John J. Garvey, 51 years; and Miss Elsie Cassidy, at the bleachery, 42 years. Rudolph C. Dick, treasurer and general manager, spoke briefly in appreciation of the many years of loyal service represented before him.

Tilton Gives Barn Dance for Employees

Nearly 100 employees of the Tilton Worsted Mills, Inc., and members of their families were entertained by the management at a barn dance in Tilton, N. H., Nov. 19. Guests included L. W. Guild head of the Boston sales office and a group from that office.

She Wove 2500 Miles of Cloth

After 55 years of textile mill work, much of it with Edwards Mfg. Co., Mrs. Hattie Pinkham of Augusta, Me., has retired at the age of 73. It is estimated that she has woven about 4,500,000 yds., or 2,500 miles, of cloth. She walked a mile to her work every day and was never late.

American Viscose Payments to Its Men in Services

American Viscose Corp., New York, reports that its benefit payments to employees entering the armed services amounted to $476,335 up to Oct. 31 of last year. The number of employees now in the services totals 2,089 men and women. Under the company's plan for its employees, they are paid the difference, if any, between the amount of their service pay (and allowances) for the first 90 days after leaving and the amount of straight time earnings they would have received if they had continued working for the company for the same period. Employees are also reimbursed for the cost of the face amount of $1,000 of National Service life insurance and upon return to the employ of the company their group life insurance will be reinstated in the amount in force at the date of their leaving.

Makes Record in Loan Campaign

E. E. Paquette & Son, hosiery manufacturers, Dundas Street, Woodstock, Ontario, Canada, led the county of Oxford in the payroll canvass in connection with the Fifth Victory Loan campaign held recently. This firm's employees subscribed 245% of their objective.

Piedmont Encouraged Food Production

The Piedmont (S.C.) Mfg. Co. has aided a home food-production program in its community in which 763 hogs were raised for slaughter and 17,700 cans of foodstuffs were put up. Residents had 402 gardens.

Cannon Holds Seventh Annual Loyalty Banquet

William P. Jacobs, executive vice-president of the Cotton Manufacturers' Association of South Carolina, addressed Cannon Mills Co.'s veteran employees at the seventh loyalty ban-

PEPPERELL MFG. CO. is producing miniature copies of Biddleford, Lewiston and Fall River newspaper and sending them to its employees in the Services from plant at those centers.

INDUSTRIAL RAYON CORP. has set up an honor roll plaque at each plant listing on one side the employees in the Services and on the other those at home who have had perfect attendance records for two months or more. At right in above picture is Samuel Samuels of the spinneret department who has not missed a day for 13 years!

quet at the Kannapolis (N.C.) Y.M.C.A. on Wednesday night, Dec. 15. Over 1,000 employees of Cannon plants in Concord, Salisbury, Rockwell, China Grove, Mount Pleasant and Kannapolis in North Carolina, and York, S. C., were present. Eighty-six men and women who have rounded out a quarter century of service in the last 12 months, received 25-year pins. Forty-five workers were promoted to the 35-year class, and 13, including A. L. Brown, vice-president and general manager, graduated to the 45-year group.

Guard Forces Honored

Col. Thomas H. Stillwell, commanding officer of the Fifth District, Third Service Command, U. S. Army, has authorized the Marcus Hook, Pa., plant of American Viscose Corp., to present to its guard force a guidon or pennant, awarded for excellence in the protection of essential war plants.

American Enka Corp., Enka, N. C., recently was honored by the War Department when Col. William S. Pritchard, of Fort Bragg, presented a guidon to the Enka guard force. The guidon was presented in recognition of the force's "outstanding and excellent achievements in the matters of training, appearance, efficiency and general cooperation."

Plant Stages Mock Air Raid

Mock attempts by saboteurs and enemy aircraft to cripple war production in the Textile Machine Works at Wyomissing, Pa., were thwarted Nov. 24 when a fast-moving plant-protection force captured four men trying to force entry into the plant during an air raid drill. The drill was dramatized by incendiary bombs and fires on the roofs of three buildings.

The staged demonstration gave 50 representatives of industrial and civilian defense facilities an opportunity to see in practice what they talked about at a two-day conference on plant protection in the Berkshire Hotel, Reading, Pa.

Safety Campaign Winners

Announcement by the North Carolina Industrial Commission of the winners of the second annual Statewide hosiery mill safety contest, sponsored jointly by the Southern Hosiery Manufacturers' Association and the industrial commission, lists the winners in the four groups as follows: Foster Hosiery Mills, Burlington; Larkwood Silk Hosiery Mills, Charlotte; Plant No. 1 of Adams-Millis Corp., High Point, and Wilkes Hosiery Mills, North Wilkesboro. While the average frequency of accidents increased from 6.25 in 1942 to 7.55 in 1943, this is attributable to increased employment and increased tempo under which the mills are working. This year 113 North Carolina mills participated in the contest, as compared with 75 in 1942.

Letters to the Editor

WMC Wishes to Reprint Article

Because of the comprehensiveness of the article in your July issue, entitled "Training New Employees Quickly," we would like very much to reprint it for distribution to those concerned with training in the textile industry. We would of course give full credit to TEXTILE WORLD.

The fact that the article appeared some time ago does not take away from its reader interest and its value to employers today in solving their training problems.

Please let me know if we may have your permission to do this.—REGINALD PERRY, *War Manpower Commission, Washington, D. C.*

Just the Information Wanted

Your letter with its valuable information, together with clippings from a 1938 issue of TEXTILE WORLD, has been received. This is just the information we are looking for and we are certainly grateful for all the work you have put into this.—E. B. ROBERT, *Pawtucket, R. I.*

Knows It Will Work

We appreciate your reply to our letter in regard to the method of duplexing of paper and cloth. Your sketch showing this method is practically along the lines of what the writer roughly sketched out on paper, and I know it will work.—KARL ALDINGER, *New Orleans, La.*

Textile World Fine, But!

TEXTILE WORLD is fine. The articles are of great value. But it is dry. There is not one bit of humor in it. I suggest that you have one spot for the odd and humorous things which occur in every textile mill. I think a column devoted to less serious matters would make your magazine more enjoyable. Also, you might put your contents page where it could be found more readily—FRED GREENWOOD

Contents page now on page 3—Editor.

A Swell Issue

As usual, TEXTILE WORLD comes out with a swell issue.—CAPT. THOMAS D. RICHTER, JR., *Philadelphia Quartermaster Depot.*

"Coats" Come Off For Action

On tropical airfields or Arctic runways, our idling planes require protection against cold, hail, sleet, blowing sands and tropical sun.

Tight-fitting, waterproof covers shield plastic noses, gun turrets and cockpit covers, among other parts, of our fighter planes.

Made of a synthetic resin-coated cotton fabric, these covers stay flexible, no matter how low the temperature. They can always be folded into compact bundles for storage and transport aboard a plane.

The Textile Industry supplies protection for all vital war equipment, as well as comfort and safety for our boys in the Service.

Butterworth Machines have an important role to play in the production of every textile necessity—bleaching, boiling-out, drying, calendering, dyeing.

Butterworth Engineers freely offer their cooperation to mills seeking to achieve increased productive efficiency . . . or to repair or replace worn-out or obsolete equipment.

All of our facilities not required for Ordnance production are available to help you solve your present finishing problems, and aid you in your post war plans. Let us serve you now.

H. W. BUTTERWORTH & SONS CO.
Phila. 25, Pa. Serving Textile Industry since 1820
Offices in Providence, R. I. and Charlotte, N.C.
In Canada: W. J. Westaway Co., Hamilton, Ont.

***64%**

of equipment now in use in the wet end of textile finishing cannot operate at a profit in competition with modern machines.

*Proved by Research

Butterworth

PRODUCING GUN MOUNTS FOR THE UNITED STATES ARMY

News OF THE MONTH

Wool Stockpile to be Liquidated. Proposals for orderly liquidation of Government-owned wool acquired through DSC are being considered by WPB. About 330,000,000 lbs. of wool are involved. Shipping space is now available from foreign sources, and the storage space in this country is needed for other materials.

Textiles for Laminates. An analysis of developments bearing on the consumption of cotton textiles for plastic laminates has been issued recently by the Cotton-Textile Institute. This is the first of a series of studies undertaken by the Institute with the object of pointing out to the cotton industry the possibilities for new business presented by industries that have expanded since the outbreak of the war.

Clemson Celebrates. Clemson College recently observed its 50th anniversary. Among speakers at the celebration was J. E. Sirrine, of Greenville, S. C.

Ban Removed on Used Textile Machinery. All restrictions on the sale and rental of used textile machinery were lifted Dec. 10, by WPB in an amendment to Order L-215.

Army Nurses to Wear ODs. While army nurses overseas have been wearing OD uniforms, a War Department announcement now states that OD uniforms will be issued to nurses in this country. The Quartermaster Corps will issue two complete uniforms to each nurse to replace the blue uniforms now worn.

Carpet Institute Meets. The sixteenth annual meeting of the Institute of Carpet Manufacturers of America was held Dec. 15 in New York. Leroy A. Beers, who was reelected president, discussed the current problems of the industry involving particularly the decline in war contracts and the difficulties in obtaining proper raw materials for civilian goods

New Merchandising Plans. Companies are already broading their sales policies to meet the postwar era. For example, Bates Fabrics, Inc., known for bedspreads, has opened a printed dress goods department. Cohn-Hall-Marx, Inc., in its downtown division, plans nationwide promotion of branded lines. Several New England fine yarn gray goods mills are planning to sell finished goods under a joint arrangement with a converting organization. Certain worsted mills which previously have done no spinning, are planning to acquire spinning facilities.

Ambidextrous Gloves for Army. The Quartermaster Corps has developed a knitted wool glove which may be worn either on the right or the left hand by means of a new method of knitting.

Textile Industry Warned. Col. Robt. T. Stevens, of the Office of the QM General, in a year-end statement speaks of "a gradual change in attitude in various quarters of the textile industries toward Army contracts." He admits certain difficulties and adds that "their cumulative effect has reacted adversely upon our procurements." He does not believe the short war theory is tenable and sees further sacrifices on the part of industry and individuals.

The M-317 Amendment. On Dec. 26 WPB amended M-317 in sweeping fashion to provide a basis for a more equal distribution over the cotton-textile industry of preference rated business, including, of course, military orders and those for exports. The trade is still trying to understand the details. It is expected similar principles will be applied to rayon.

This and That. The Fourth War Loan Drive starts Jan. 18 and ends Feb. 15—Buy War Bonds! . . . The magazine "Pic" on Jan. 18 started a series of articles dealing with the designing of men's fabrics and clothing by American stylists. . . . The annual hosiery industry conference will be held in April. . . . Hosiery's MPR-339 has been well revised, effective Jan. 15. . . . D-13 meets Mar. 8 to 10 in New York.

Textile Markets Sluggish. Year-end dullness affected the markets but movements are current which may release pent up trading. Cotton goods men are busy analysing many new WPB orders which vitally affect their business. Wool goods are quiet but watchful of their raw material situation. Rayon scarcities continue. Hosiery sales for first quarter hold up well. Underwear mills are further cramped by yarn scarcities, and outerwear sales are booming.

New officers of Southern Textile Association elected at meeting held last month in Charlotte, N. C., left to right, are: seated—Joe C. Cobb, president; T. C. Pegram, retiring president; and Marshall Dilling, re-elected executive secretary; standing—B. M. Bowen, chairman of the board; Weldon Rogers, vice-president; James T. McAden, re-elected secretary and treasurer; and John C. Turner, chairman of associate members division.

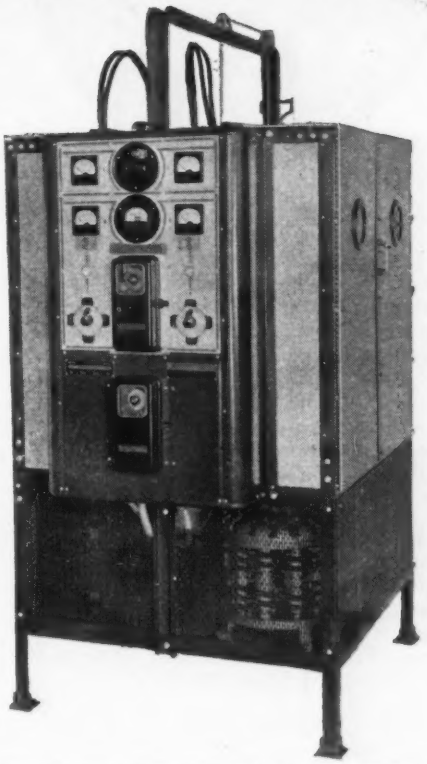
Weathering effects on fabrics accurately reproduced in the laboratory

ATLAS TWIN-ARC WEATHER-OMETER

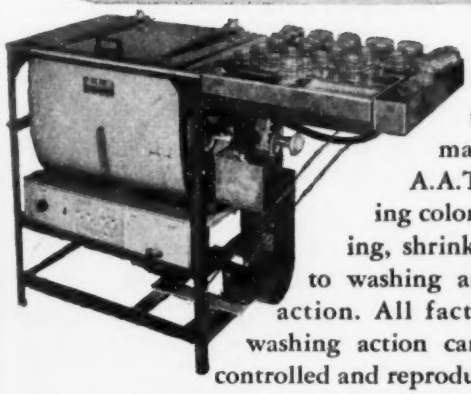
Faithfully duplicates the combined weathering effects of sunlight, rain, heavy dew and thermal shock; accelerated to reduce years of actual weathering to a few days of testing.

The new Twin-Arc Weather-Ometer is equipped to take large size textile specimens in order to meet the new Federal Specifications demanding accelerated weathering tests. Full automatic control of light and water periods is provided by the Atlas cycle timer unit, which can be set to meet standard and special requirements of weathering tests. A direct reading thermal regulator, automatic shut-off switch and a running time meter is included as standard equipment. After setting exposure cycles on the control panel the Weather-Ometer can be safely left in continuous operation over night without attention except to replace carbons once in 24 hours.

The Atlas Weather-Ometer proves the durability of materials under exact conditions of weathering found in actual use in outdoor exposure.



ATLAS LAUNDER-OMETER



The standard laboratory washing machine of the A.A.T.C.C. for testing color fastness, staining, shrinking, resistance to washing and mechanical action. All factors including washing action can be carefully controlled and reproduced identically at any time. The new preheating loading table, increases accuracy of tests by starting all samples at uniform temperature.

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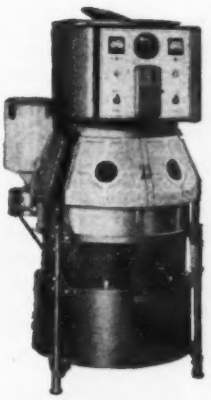

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MANUFACTURERS' BULLETINS

READERS interested in literature reviewed on this page may secure copies by using time-saving coupon on page 116. Mark what you want on it and send it to Textile World, 330 West 42nd St., New York 18, N. Y., being sure to give your name and company connection.

1. Clothing the Army in all types of weather is graphically illustrated in an article entitled, "Zelan Helps Cotton Clothe an Army," appearing in the November-December issue of *The DuPont Magazine*, published by E. I. duPont de Nemours & Co. Textile mill men will be interested in this article as numerous photographs are contained showing the severe conditions under which Army clothing must withstand the elements.

2. Textile mill executives holding contracts for parachute fabrics will find an article "Do You Size Nylon for Parachute Cloth?" of interest and help. This article appears in the November issue of the *Rayon Warp Sizing Specialist*, published by Charles B. Johnson Machine Works.

3. Mill engineers interested in humidifying will find the December issue of *Parks' Parables*, published by Parks-Cramer Co. helpful. Aside from the general story covering humidification, numerous photographs are included showing various types of humidifying units installed in textile mills.

4. Metallizing and how it may save much valuable time which ordinarily would be required in waiting for replacements, is discussed in the September-October issue of *Metco News*, published by Metallizing Engineering Co., Inc. Among the industrial applications of metallizing described is one covering the rebuilding of machine tools.

5. Maintenance engineers will find a useful chart entitled, "Machine Breakdown Report," appearing in the November-December issue of *Operation and Maintenance Review*, published by Allis-Chalmers Manufacturing Co., helpful in their work. Interesting facts on a-c welding are contained and also information concerning lubrication deals with the oil wedge theory.

6. Checking unit heaters, as described in *Armstrong Trap Magazine*, Issue No. 4, published by Armstrong Machine Works, covers many helpful hints on preparing unit heaters for winter operation. Plant engineers also will be interested in another article contained in this issue concerning humidifying as employed in a hosiery mill.

7. "Production Moves on Floors," is the title of an article appearing in the November issue of *Building Maintenance*, published by Truscon Laboratories, Inc. All plant engineers are interested in maintaining good floors which thereby reduce accidents, speed production and lower the amount of maintenance work required. Much useful information is contained in this article covering the dust menace, patching of floors, chemical treatment and transparent finishes as well as resurfacing.

8. "After the War—What?" is the title of an article appearing in the November issue of *Davis & Furber News*, published by Davis & Furber Machine Co. All woolen mill executives will be interested in this article as it states that improvements should be planned and should be started now. Also, information is given about the spinning frame to be used after the war.

9. Fireproofing of cotton and wool fabrics, as developed by the U. S. Chemical Warfare Service, has been announced in the November issue of *The Pioneer*, published by the Niagara Alkali Company. It is stated that already several thousand yards of fabrics have been fireproofed in the laboratory and that drape, hand and fabricating qualities are good and certain types of dry-cleaning agents may be used.

10. Used machinery available to the textile industry and other industries is listed in Vol. 10, No. 1 of *Consolidated News*, published by Consolidated Products Co., Inc.

11. "All Aid to Mills . . . short of Nothing." is the title of a folder published by Whitin Machine Works describing the development of the Whitin-Schweiter winder. This interesting folder describes how plans were made to bring the first Schweiter winder to the United States. Photographs contained illustrate how this winder was being built by Whitin in their machine shops.

12. Dyeing of Wind Resistant Cotton Poplin, Olive Drab No. 7, is covered in Supplement No. 2 of Calco Technical Bulletin No. 636, published by Calco Chemical Division of American Cyanamid Co. A formula is given for use by the pad-jig method.

13. Cleaning of mill motor trucks and garages is discussed in great detail in a folder titled, "Modern Oakite Cleaning Methods," issued by Oakite Products, Inc. Formulas are contained for mixing cleaning solutions and detailed instructions given as to how various parts of trucks as well as the entire chassis and motor and other parts may be easily cleaned. Also methods of cleaning the garage floors are described in great detail.

14. "A Salute to the Textile Industry," is the title of a folder offered by Burkart-Schier Chemical Co. It illustrates a series of advertisements published in textile trade journals outlining textiles' vital role in winning the war.

15. Containers for handling textiles are described in a leaflet offered by G. B. Lewis Co. Various types of containers for handling bobbins and roving are illustrated and described in this folder.

16. A lubrication chart has been issued by E. F. Houghton & Co. which indicates the correct lubrication for use with hydraulic systems, spindles, air compressors, reduction gears, general plant lubrication, electric motors and also covers high temperature oils. This wall chart should prove helpful as a guide for correct lubrication of textile equipment.

17. Thread guides are discussed in Bulletin No. 142, published by American Lava Corp. Physical properties of the thread guide material are listed and extensive information is contained on design limitations, size limitations and tolerances to which the thread guides may be manufactured.

18. An electrode chart suitable for hanging on the wall has been offered by Metal & Thermit Corp. This chart contains much useful information and serves as a guide to the right kind of electrode to use for a job. Also, illustrations are shown indicating how different types of welds should be made.

19. Fluorescent lighting fixtures in five new designs are described in Bulletin F-70, offered by Day-Brite Lighting, Inc. Besides illustrating the new fixtures a brief description is given concerning their construction.

20. Industrial rubber products produced by Manhattan Rubber Division of Raybestos-Manhattan, Inc. such as belts, hose, molded goods, packing, etc. frequently used by textile mills are described in a 140-page catalog issued by this company, titled, "Manhattan Rubber Products for Industry." Engineering data on belting and hose and technical information on other products is included.

21. Fire pump units in 500-750-1000 gal. capacity and gasoline engine driven

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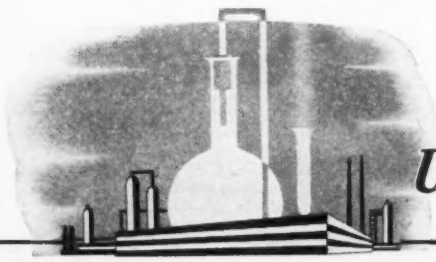

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are described in Bulletin 5813FS, issued by Fairbanks, Morse & Co. This bulletin shows approved methods of installation and gives dimensions for various capacity pumps; also an approved fuel system for driving the gasoline engine is illustrated.

22. Automatic belt tension control is discussed in a 70-page handbook covering the new Econ-o-matic drives and offered by American Pulley Co. This handbook shows why the drive increases production and eliminates belt slippage, increases belt life and reduces maintenance. Information is also contained concerning V-belt and flat-belt drive selection tables, specifications and instructions.

23. Resurfacing concrete floors with Agatex is covered in detail in a folder offered by Agatex Corp.

24. "90 Years of Industrial Pioneering." is the title of a 37-page booklet issued by Swan-Finch Oil Co. This booklet describes not only the progress in development and lubricating oils but also explains how these products are helping to win the war. Numerous old industrial prints are reproduced throughout.

25. Portable pumps are described in Bulletin 433, issued by Chain Belt Co. Small portable pumps ranging from 62 lb. in weight with a capacity of 3,000 gal. per hr. to larger pumps with a rated capacity of 125,000 gal. per hr. are described in this bulletin. Also contained is information on how to figure the right pump for the job, and tables covering water friction in 100 ft. of pipe and also practical suction lifts for various altitudes. Pressure conversion tables are also included.

26. Industrial fluorescent lighting is described in a folder offered by Fostoria Pressed Steel Corp., titled, "Design for Efficient Industrial Seeing." Balanced lighting, its relationship to the worker is discussed and many photographs of various industrial lighting installations are given.

27. Variable speed control is discussed in Catalog No. G-435, issued by Reeves Pulley Co. Several textile installations utilizing remote control in speed regulation in textile mills are shown. Dimensions of various types of installations and speed ratings are contained in the engineering tables.

28. "Adjustable Speed, Electronically," is the title of a 40-page bulletin, GEA-4025, issued by General Electric Co. The bulletin, well illustrated throughout, is divided into two parts. The first explains a unique drive, describes its functions and lists its advantages. The second part is a complete description of the operation of the electronic control.

29. A transportation and industrial map of the Cincinnati Commercial area is being offered by the Cincinnati Chamber of Commerce. This industrial map, 28 x 36 ¾ in., is printed in color shows the municipal limits of each city in the area and the commercial zone. Railroad lines and switching limits, Cincinnati harbor limits on the Ohio River, airport locations, main highways as well as principal available industrial sites are part of the material making-up this map.

30. "Infra Red," is the title of a bulletin offered by C. M. Hall Lamp Co., describing radiant heat for use in industry. Numerous types of infra-red drying installations are described and illustrated along with correct dimensions and essential data concerning wartime use and possible peacetime use of such installations.

31. Textile engineers will be interested in a booklet entitled, "Electronics in Industry," offered by RCA Victor Division of the Radio Corporation of America. This 44-page booklet illustrates and describes various electronic applications such as the electronic microscope and the electronic sewing machine recently developed for sewing coated fabrics, such as raincoats and other fabrics now being utilized by the Army and Navy.

32. A freeze-up prevention list has been issued by Factory Insurance Association which should be in the hands of all plant engineers. This list covers buildings and yards, heating systems, sprinkler systems, tanks, fire pumps, new construction and many other items which should be checked to prevent freezing.

33. Instructions for lift truck operators have recently been published by Towmotor Corp., in a 24-page booklet. Operating instructions in simplified form are given regarding starting, shifting gears, steering, lifting and tilting. Charts give a visual picture of the Towmotor control for each operation.

34. Horizontal mixers and vertical blenders are described in a folder offered by Edge Moor Iron Works. Horizontal mixers, vertical liquid mixers, jacketed cooking kettles and other equipment are covered.

35. Butterfly valves are described in a catalog 14-B for pressures as high as 900 psi. This 36-page catalog describes a complete line of such valves, both manual and power operated. A three-way butterfly valve with interchange service is featured.

36. "Modern Materials Handling Machinery," is the title of a booklet offered by Yale & Towne Mfg. Co., which describes graphically how materials handling machinery is aiding American industry. All production engineers should have a copy of this booklet as it covers materials handled of products when received and various methods of handling by both hand-lift trucks and power trucks. The booklet also includes hoisting equipment with vertical and horizontal movement, and a pictorial review section contains materials handling machinery used by American industry.

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This mailing coupon is a convenient size to paste on a penny postcard. **Circle the numbers of the catalogs you want** which correspond to the numbers on the descriptive paragraphs. Fill out the coupon **legibly** and **completely.** Paste it on a postcard, or put it in an envelope if you prefer, and mail it to Textile World, 330 W. 42nd St., New York 18, N. Y.

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QUESTIONS & ANSWERS

SOLUTIONS TO MILL PROBLEMS

Uneven Worsted Yarn

Technical Editor:

We are having considerable difficulty in spinning a good, even, Bradford yarn from 48's quality New Zealand top. A sample of the top and also 3 samples of 1/18's yarn—spun from the same top are inclosed. We have tried two different drawing layouts, as given, but still do not spin a good sound yarn. Besides being uneven the yarn appears to contain quite a few places that look like pieces of fly waste, but we have checked that possibility and find that our operatives are keeping the frame very clean, which eliminates the possibility of waste.

Our layouts are shown at the right. Below is given additional information.

Can Gill Box—2¼-in. front roller—double row of pins in fallers—14 pins per in.
2-Spindle Gill Box—2-in. front roller—single row of pins in fallers—13 pins per in.
All drawing boxes have 4-in. front rollers—all flyers as far down as drawing rovers, then use ring rovers.
Spinning—3 in. ring—spindle speed of 4,200 r.p.m. twist 11 turns per in.
Yarn is uneven—has been tried for strength and found to have many weak places. (8956)

Layout No. 1

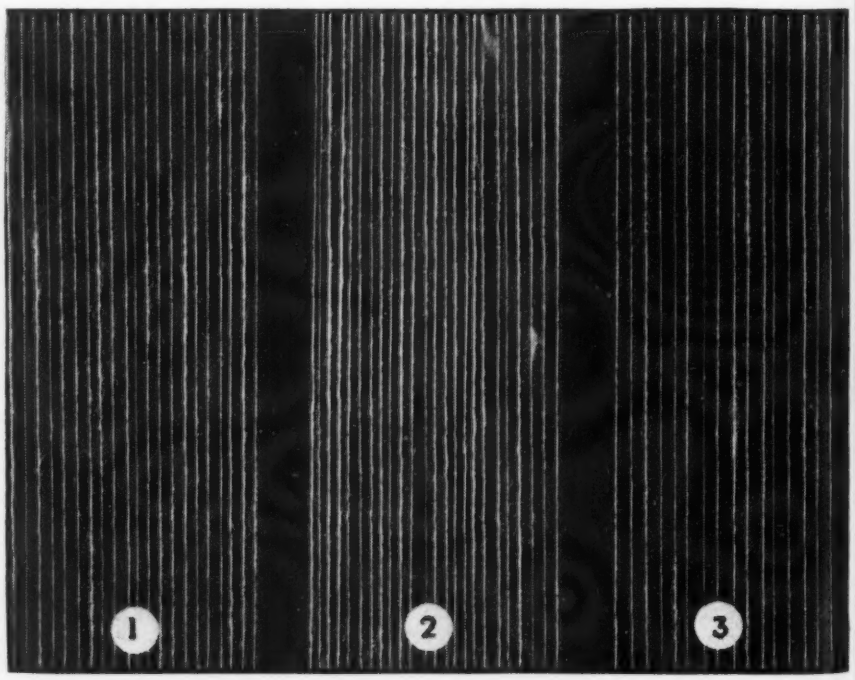
Operation	Ratch In.	No. of Doublings	Draft	Strand weight per 40 yd. in grains
Can Gill	open	7	6.0	13,450
2-Spindle Gill 14-in. x 9-in. bobbin	open	4	7.0	7,700
6-Spindle Draw Box used as weigh box 14-in. x 8-in. bobbin	11½	5	8.0	4,800
8-Spindle Draw Box used as weigh box 14-in. x 7-in. bobbin	11¼	5	8.0	3,050
10-Spindle Finisher 12-in. x 5-in. bobbin	11	4	9.5	1,300
Rovers 8-in. x 4-in. bobbin	10¾	2	9.5	275
Spinning	10¾	1	8.1	1/18's

Layout No. 2

Operation	Ratch In.	No. of Doublings	Draft	Strand weight per 40 yd. in grains
Can Gill	open	6	6.0	15,000
2-Spindle Gill	open		6.2	7,300
6-Spindle Draw Box	11½		7.0	4,200
8-Spindle Draw Box	11¼	4	5.0	2,900
10-Spindle Finisher	11	3	8.7	1,000
Rovers	10¾	2	8.7	330
Spinning 8-in. long x 2½ in. base	10¾	1	10.0	1/18's

Examination of the samples brought out the following information and recommendations:

1. The top is very uneven.
2. The top has too high percentage of noils.
3. The top has excessive amount of oil.
4. The ratch is too long. A 9-in. spinning ratch is suggested with a gradual increase to 9¾ in. ratch in the 6-spindle draw box.
5. It is suggested that 13 pins per in. would be better than 14 for the can gill.
6. Layout No. 2 is the better, but it is suggested that 4 ends up in 2 spindle gill box be used instead of 3 ends. Change drafts accordingly.
7. It is also suggested that it shoul l



Representative samples of 1/18s Bradford yarn taken from each of the three samples have been mounted on cards and are illustrated above. Note that the yarn shown on sample cards 1 and 2 indicates much uneveness and appears as if fly waste was present. Sample 3 is evener, but has the appearance of fly waste in several places. However, frames are kept very clean, which eliminates the waste possibility.

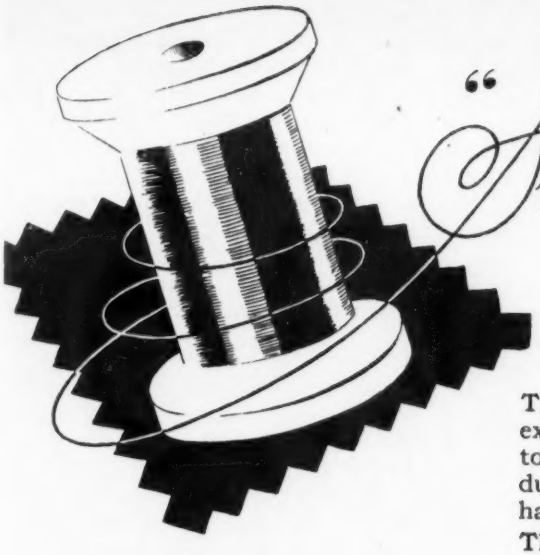


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Fig. 2453 is an example of Powell's complete line of stainless steel, steel alloy, pure metal and special alloy valves for handling *dyes, finishing solutions, bleaching compounds* and other *corrosive media*.

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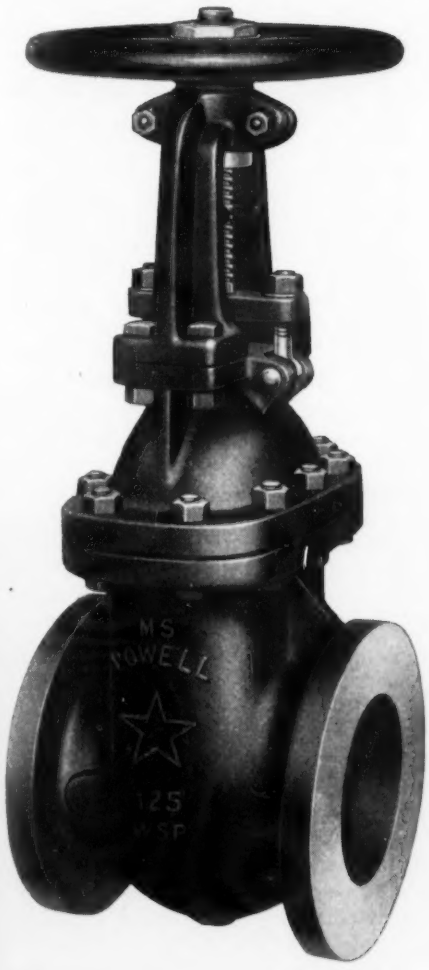

Fig. 1793—A 125-pound Iron Body, Bronze Mounted Gate Valve, with flanged ends, outside screw rising stem, bolted flanged yoke, bronze seat rings and taper wedge solid disc. Sizes 2" to 30", inclusive. Also available with double disc, in sizes 2" to 12", inclusive, Fig. 1444.

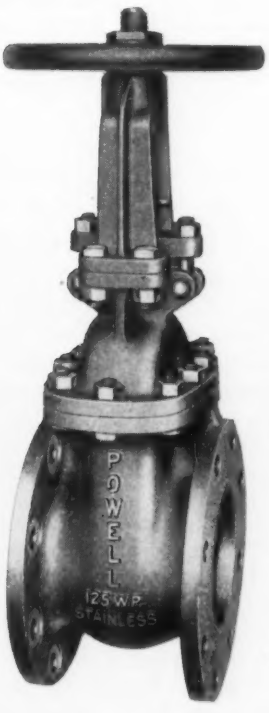

Fig. 2453—A 125-pound Stainless Steel Gate Valve, with flanged ends, outside screw rising stem threaded through bronze bushing in upper yoke arms, full flanged, bolted bonnet and taper wedge solid disc. Sizes 2½" to 30", inclusive.

Fig. 1708—A 200-pound Bronze Globe Valve, with screwed ends, union bonnet, renewable seat, and regrindable, renewable nickel bronze semi-cone, plug-type disc. Sizes ¼" to 3", inclusive.

POWELL VALVES

be possible to increase spindles speed to 5,000 or 6,000 rpm.

The sample sliver received was found to contain 27% of fibers 3 in. and less in length. Of this 11.5% was 2 in. and less and 15.5% from 2 in. to 3 in. long, all of which would be classed as noils. Fiber lengths of 9 in. accounted for 6.8% and 10-in. fiber amounted to 5¾%, which indicates that the ratch should be shortened for better fiber control of the remaining 60% of fibers with lengths from 3 in. to 8 in.

Bleaching Spun Rayon

Technical Editor:

Kindly send me such information as you can on bleaching spun rayon fabrics. The particular fabric in which I am interested is a 48 in., 68x64, 4 yd. fabric. Also, is it possible to use hydrogen peroxide or Textone for bleaching this material? (8960)

The description of the fabric is vague but it is evidently a spun rayon challis. Such fabrics are first scoured in a bath containing ½ of 1% soap and ¼ of 1% soda ash at 180°F. for ¾ hr. This is followed by a chlorine bleach using ⅛°Tw. sodium hypochlorite, antichlor with ⅛% of 1% sodium bisulphite, and rinse. These fabrics are usually scoured and bleached in rope form on a reel dyeing machine, such as is available in any finishing plant handling rayon dress goods. Spun rayon fabrics of this type can be bleached satisfactorily with hydrogen peroxide or with Textone, and some plants use one or the other of these chemicals instead of sodium hypochlorite.

Twists for Sewing Thread

Technical Editor:

Can you give me some information about sewing threads, especially the twists of different yarns and different staples recommended? (8950)

In general, in making a 6-cord thread the singles yarns are twisted in one direction, then plied into 2-ply yarns with a twist in the same direction, and finally are plied into the 6-cord thread with a twist in the opposite direction.

Frequently 1⅜-in. staple cotton is used for manufacturing sewing threads. The following data on twists are for thread on 36s count.

For 36/3 the twist multiple for the singles yarn is 3½ times the square foot of the yarn number; for the plied yarn, 5½ times the square root of the yarn number. Some mills to get balance, raise the singles to 4 times the square root of the yarn number, and reduce to 5¼ times the square root of the yarn number for the ply yarns.

For 36/2, the twist multiple for the singles yarn is 3.75 times the square root of the yarn number; and for the ply yarn 4.7 times the square root of the yarn number.

For 36/4 shoe thread, the singles is 2.75 to 3 times the square root of the yarn number, and the ply is 4.75 to 5 times the square root of the yarn number.

For 36/6 thread the twist mutliple for the singles is 3 times the square root of the yarn number. The first twisting is 4.25 times the square root of the yarn number and the second twisting is 6.55 times the square root of the yarn number.

Rolling Warp Ends

Technical Editor:

In making an acetate cloth with 150 ends per inch of 75-den. dull rayon yarn we have trouble with some warp ends rolling in back of the loom and snapping or breaking. Where could the source of the trouble be located? We are using a static eliminator in warping and a straight creel with about 600 bobbins. (8959)

Rolling of ends in a warp can be traced to causes in warping or slashing operations. We assume that the old silk system of warping is being used and also the same system in slashing. Better results would be obtained if these warps were made on section beams which would permit the use of split-rods and combs in slashing, and thus separate each individual end.

Assuming that the silk system is being used, a few points listed covering the preparation of the warps may be of help to eliminate rolled ends.

WARPING. The construction, 150 ends of 75-den. acetate, appears to be a taffeta weave using a 50/3/1 reed count. The section reed in warping, therefore, should not contain more than 6 ends per dent.

This reed should also be moved as close to the guide roller as possible so that the ends are delivered onto the warping wheel in the same position as the section reed splits them. Too great a distance between this reed and roller invites the ends to swing and vibrate and thus causes rolling.

It may be helpful to warp with a lease rod so that the ends in every dent in the section reed are separated. Watch warping speed. Too high a speed when warping from rolling bobbins will result into uneven tension of the individual end.

SLASHING. Use a static eliminator at delivery end of machine.

A firm warp tension before yarn enters the size bath is essential. Warp ends must not quiver or vibrate. The same also is true when the warp travels from the quetsch to the first cylinder.

Watch yarn stretch; acetate should never exceed 5%. Most stretch takes place after the yarn leaves the quetsch. Also, quetsch rollers must run absolutely true and parallel to each other. Do not press the warp too hard between these rollers as the ends will be flattened.

The first cylinder should be covered with a suitable cloth. It may even help to have two or three or even all cylinders covered. Covering prevents slipping of yarn on the smooth metal surfaces and holds the ends in their original positions. Warps must not be over-sized and the ends baked together by excessive cylinder temperature.

WEAVING. Sometimes rolled warps can be woven satisfactorily by observing the following points:

Do not use a whip roll but run the warp in a straight direct from the beam. Move the warp back as far as possible to allow for maximum stretch between the warp beam and breast beam. Use a firm warp-tension. Try taking a full lease between warp-beam and drop wires. The lease rod nearest the warp beam should be of large diameter so as to force a separation of ends as far back towards the beam as possible. The warp stop-motion should be adjusted so that drop wires move freely with every change of shed formation.

Blending Wool Stock

Technical Editor:

Your explanation for blending stock for 30-oz. fabric in the Questions and Answers columns of the October issue of TEXTILE WORLD is OK, but the inquirer's trouble may be in his cards. Have him weigh each end of roving for variation. His trouble may be fine and coarse yarn, or it could be in his feed not working right. He should check his spindle bands for variation in twist and then check looms for variation in let-off or take-up. If he has ring doffers, he should check how they are spaced on doffer for width of card. I have seen some very poorly spaced causing uneven roving. You did not say how many times the mix should go through mixing picker. I have found that three times gives a good mix if scattered over enough space in thin layers. I hope this will help 8919 clear up his trouble.

INVITATION to MAGICIANS

If you have waved your magic wand and have produced from your silk hat a new fiber, a new finish, a new process or a new machine for the textile industry, you are invited to tell us about it. We have successfully pioneered many "firsts." We have worked with organizations and individuals in their "trial and error" phases, and from small beginnings have helped many new ideas grow to important stature.

The mills we represent make 25,000 different fabrics. They are consuming more than 30,000 bales of cotton per month, as well as substantial quantities of rayon and other synthetics.

They are modernly equipped with the finest machinery, humidification and lighting—all the "magic" of former years, now in common use.

Today's magic may be tomorrow's commonplace—IN VOLUME—and we are volume producers.

Our selling organizations have a strong position in many markets—for industrial fabrics, garment fabrics, fine cottons and rayons, towels and toweling, etc.

If you believe that you HAVE something, either for textile products or processes, we shall be glad to review it with you. Our laboratories are constantly reviewing the field of textiles and textile processes to find better ways to make better products.

Get in touch with our TECHNICAL DIVISION and let's find out if we have a mutual interest.

BUY MORE WAR BONDS

WELLINGTON SEARS COMPANY

65 WORTH STREET • NEW YORK 13, N. Y.

ROUND TABLE

FOR EXCHANGE OF IDEAS

With meetings of operating executives curtailed, there is need of a meeting place where mill men can discuss problems among themselves. The Round Table is designed to supply this need. It is open to all readers for discussion of subjects relating to mill management and operation. Bring your problems to the Round Table. Give other mill men the benefit of your experience, and get their ideas in return. Names of contributors to the Round Table will be held confidential if so requested. Sign your contribution with a pen name if you wish to preserve complete anonymity, but include your real name and address as evidence of good faith and to permit payment for items published. Address contributions to: Editor Round Table, Textile World, 330 West 42nd St., New York 18, N. Y.

Are Payroll Deductions Causing Poor Employee Relations?

We know that our mill has a large number of employees that resent our making the payroll deductions. They do not seem to realize that we are only acting as agents for the Government by deducting social security and the withholding tax, but a number evidently believe we are in some way responsible for the inroads into their pay envelopes. This attitude of resentment comes out when they are questioned about being absent or asked to work over-time. They seem to feel they might as well do as they please as most of their pay is deducted anyway. This is unfair to the mill as we are agents by law and must collect the taxes regardless of how our employees feel about it.

Has any mill man found a way of getting the facts over to employees so no resentment is built up in their minds? If so, I would like to get the details as we have a real problem on our hands.—J.C.

Slasher Blankets and Rolls

My advice to the person who may contemplate the trial of cotton blankets on slasher finishing rolls, as mentioned in the October issue, is to steer clear of anything short of well-woven woolen cloth. I have seen cloth of cotton warp and woolen filling which could deceive many while new; but as the filling wore out, the ends of the bleached cotton warp stared one in the face. Cotton is not proper for that purpose because it soon binds down so tightly on the finishing roll that it loses the uniform soft sponging capacity necessary to perfect sizing of cotton yarns.

A few mills are still using rolls made of woolen or worsted threads wound around them. That practice is very bad for several reasons. It is a waste of starch, it gums up the cylinders, pulls the fibers from the threads and reduces production. As to rubber rolls, I have seen that tried just once, with impractical results.

Since your correspondent appears to me as one who is not too conceited to ask opinions from others, I will in the same humble spirit tell him a few things which I have kept to myself for over thirty years.

Good blankets do not necessarily mean good warp. There are numerous important factors that must be considered, including uniform and proper tension which even the vast majority of slasher tenders never learn in a lifetime. I have, since 1889, been a slasher tender and have seen enough good yarn spoiled and mill cellars filled with bad warps, the cost price of which would have made me a millionaire.

Since my youth, I have seen many systems of dressing warps. The hand dresser had then just passed out. Pin beaming, long chain beaming and the hot-air slasher all played their part in the production of warps, especially in plaid ginghams. Because few could do this work well, many Scotchmen were brought over directly from Glasgow to operate tape slashers. They used the same hook-reed arrangement which we now employ to make rayon warps.

The whole process of carding and spinning is a matter of positive gearing arrangement which can hardly go wrong. But, it is not so with the art of dressing warps; it is the human element which makes or breaks the mill. Perfectly good yarn may be slaughtered, torn, crossed, strained and hardly sized at all during dressing.

Often when it is assumed that yarn is being very heavily sized merely because it feels very rough as one passes the fingers through the yarn at the large slashing rod. A glance into the size box and the knowledge of the general conditions of the machine will, however, tell the whole story. Passing the fingers through the yarn is actually just a meaningless gesture. —C. A. Brown.

Training Loomfixers Quickly

To a certain extent, the idea of training fixers for one specific motion, as suggested in the June issue, may be the answer for temporary needs, but not for a long-range program. In the past, a few mills installing their first automatics, sent their best fixer to the loom builders to study the transfer exclusively. All break-downs on transfers required his specialized training. In time, however, the section fixers became familiar with this motion and loom efficiency steadily increased.

Production and quality will suffer under the specialized plan when fixers called to a loom are unable to repair the break, and the loom is stopped until the right fixer for the job arrives. An over-all fixer, knowing the looms in the section, often makes a fix in a few minutes, which may require hours under the specialized plan.

Loom trouble is often the result of a combination of conditions; and in adjusting these conditions, further trouble occurs, requiring the adjusting of various motions in place of but one. Here is one of many instances that could be cited. Supposing the pick motion expert was called on a loom bang-off. More power to the shuttle is required. Further call-backs are necessary, and it is discovered the warp tension is too taut. This requires the let-off expert. After this adjustment the pick-motion expert must be recalled to readjust former adjustment.

WANTED

TEN ATTENTIVE EARS

There are manufacturers today who are giving considerable thought to post-war activities. Some will continue to do just that and very little else, while there are others who really intend doing something about it.

These are the manufacturers to whom this advertisement is directed.

To TEN manufacturers reading this advertisement, and who are genuinely interested in the IMMEDIATE modernization of their plants, Willcox & Gibbs offers the services of a staff of engineers who know the techniques of plant modernization. Our technicians will render every possible assistance in re-arranging your sewing rooms and working out ways and means for the highest possible output with lowered maintenance costs, consistent with product quality.

If you are one of the ten, write, telegraph or telephone for further information.

WILLCOX & GIBBS SEWING MACHINE CO.

214 West 39th Street, New York 18, N. Y.

Silv-A-King "RLM" Standard Dome Reflectors

Silv-A-King "Victory" Fluorescent Units

LIGHTING EQUIPMENT

For Industrial Needs

In spite of the heavy demands of war production, Silv-A-King—specialist in industrial lighting for close to a quarter-century—is regularly filling priority orders for both fluorescent and incandescent lighting equipment. Silv-A-King lighting units offer many advantages in over-all efficiency, easy installation and maintenance—and all equipment conforms to RLM and other recognized standards for high quality and efficiency.

Silv-A-King lighting service—which costs nothing extra—includes expert guidance in planning lighting layouts for maximum efficiency, flexibility, and economy. Why not discuss your lighting problems with a Silv-A-King engineer? *And send for the complete Silv-A-King catalog today!*

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306 Morgan Avenue, Brooklyn 2, N. Y.

Other SILV-A-KING *Products*

HIGH BAY MOUNTING UNITS
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PAR-38 WIRING TROUGHS
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SILVERED BOWL DIFFUSERS
STOCK-AISLE REFLECTORS
VAPOR-PROOF LIGHTING UNITS
FLOOD AND SPOTLIGHTS

FLUORESCENT
SILV-A-KING
INCANDESCENT

SILV-A-KING MAKES *Light* WORK FOR YOU

(*Continued from page 122*)

Or in making an adjustment not required, the transfer motion is damaged, etc.

If a light system were devised to call the specialized fixer to a certain section, production could be better controlled.

Increase the section load by at least tripling the usual load on an expert fixer and raise his pay accordingly, leaving him to determine what fixer is required for the trouble. Thus he switches on the light—green for pick motion; red for transfer motion; white for head motion; blue for shuttle trouble (nicks, points, tensions, etc.). By this method, you can get by. In fact, the writer believes strongly in boosting the pay of fixers and any other prized employee to a high point which will make the job so attractive that no one but Uncle Sam could pry the worker from the job.

Fixer-learners should be the best weavers in the plant; they at least know some of the basic requirements of fixing, and can change pickers, spindle rods, pick sticks, strapping, etc. The main consideration in making fixes is to place on the new part in exactly the same position as the old part—screws, bolts, straps, etc.—in measured location. If trouble then occurs, the fixer is notified. Many fixer-learners can easily attach harness straps, wires and many other parts.

Have them attend extra sessions at fixer school after working hours. Blackboard a special lesson on each part, as well as actual instruction on the part on an extra loom for this purpose. Give them all the subject matter, such as magazine and books available, so they can pick up various instructions during home-time reading.—P.F.T.

Card Grinding

I am interested in seeing some opinions in the Round Table on the use of the solid rock wheel for traverse grinders for cards—also the plough grinder for rejuvenating worn cylinders and doffers.—W.R.B.

Are Women Suited for Doffing?

In the September Round Table, one man asked about the experiences of others in using women doffers. He said that it takes large women to doff heavy package, and I agree with this observation. However, I don't agree that women doffers are inefficient. We have some women doffers as good as

UNIQUE NEW ROOF INSULATION

● *Composed of millions of minute cells* —air trapped in glass—PC Foamglas defies heat and cold, withstands vapors and moisture—permanently. A non-priority material, you can get it now.

Impervious to acid atmospheres and dampness—which cause many other materials to swell, warp, or rot and rob them of their insulating qualities—fire-resistant and vermin-proof, because it is glass—PC Foamglas does not deteriorate, does not have to be replaced.

Rigid, yet light—it weighs only 0.9 lb. a board foot — PC Foamglas is the ideal insulation for a built-up, walk-on roof. It can be trimmed and shaped right on the job when necessary, can be quickly installed. Think how much time, trouble and money this new insulation can save you.

TEXTILE mills require unique qualities in roof insulation. They demand more than rigid control of temperature and humidity. Goods in every processing stage must also be protected from damage by dampness and moisture that would cause ruinous spoilage. So they must have an insulating material that is water-proof and dust-proof, as well as heat resisting, one that is, above all, permanently, unfailingly efficient —in short, the sort of roof insulation you can get only with PC Foamglas.

Foamglas is applied to the roof deck in accordance with standard insulation practice, then covered with your approved built-up roofing material. It retains its full insulating efficiency throughout the life of the building. Remember—first cost is last cost when you use PC Foamglas.

SEND FOR FREE LITERATURE

We shall be glad to send you complete, detailed information about this unique, new roof insulation, telling how it can save you time, trouble and money, when you fill in and mail the convenient coupon.

PC FOAMGLAS

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Please send me, without obligation, your FREE literature on PC Foamglas Roof Insulation.

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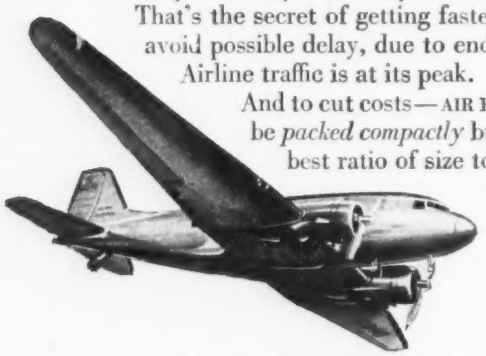
That's the secret of getting fastest delivery. Because you avoid possible delay, due to end-of-day congestion when Airline traffic is at its peak.

And to cut costs—AIR EXPRESS shipments should be *packed compactly* but securely, to obtain the best ratio of size to weight.



A Money-Saving, High-Speed Tool For Every Business

As a result of increased efficiency developed to meet wartime demands, rates have recently been reduced. Shippers nationwide are now saving an average of more than 10% on Air Express charges. And Air Express schedules are based on "hours", not days and weeks—with 3-mile-a-minute service direct to hundreds of U. S. cities and scores of foreign countries.

WRITE TODAY for "Vision Unlimited"—an informative booklet that will stimulate the thinking of every executive. Dept. PR-1, Railway Express Agency, 230 Park Avenue, New York 17, N. Y.

AIR EXPRESS
Gets there FIRST

Phone RAILWAY EXPRESS AGENCY, AIR EXPRESS DIVISION
Representing the AIRLINES of the United States

any man we have, especially since we have lost so many experienced doffers to the armed forces. I think serious young married women that are quick with their arm movements can usually make very good doffers. Women are also better when they have fast, men doffers working in the same room where they can help them over a rough spot occasionally.

We are all just beginning to understand women in the mill, although they have always worked there on a few special jobs. I believe the overseers and second hands have got to study women's mental and physical reactions to new work and spend more time adapting the machine and the work to allow women to do their best. Two years ago no one ever heard of women running slashers, but I know of one mill that has women running slashers. We supervisors still have plenty to learn about our women workers.—J. A. MASON.

Strongest Spun Rayon Yarn Not Best Weaving

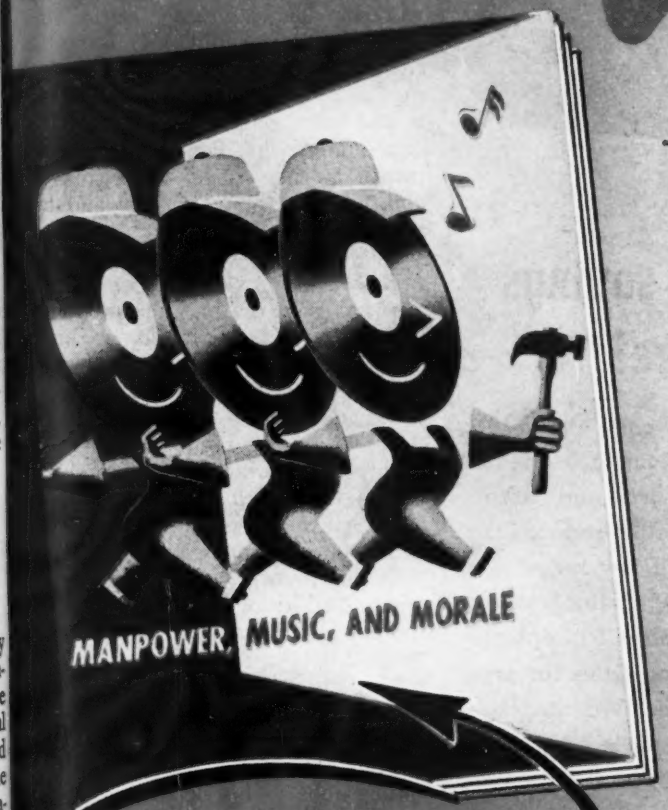
We run a spun rayon blend in our mill into warp and filling yarn and use a twist multiple to give us the strongest yarn. However, we find that the strongest yarn doesn't weave as well as one with a higher twist multiple. I can't explain this action of rayon unless it is that a little more twist than it needed for the strongest yarn gives spun rayon more resistance to abrasion from drop wires, harness, reed, and shuttle. Can you Round Table readers explain this?—W.C.

Should Foremen Hire and Fire?

Your August issue carries a letter by C.E.W. In it he says: "A good personnel manager knows how to examine applicants, place them wisely and deal with workers who have real or fancied grievances. On the other hand, the average overseer has not had the training and is primarily a production man. By relieving the foreman of the responsibility of hiring and firing and settling grievances the factors of favoritism and prejudice in dealing with workers are largely eliminated, etc."

It is my opinion that this is contrary to good sound management, because: first, human relations are so closely tied up with production that they cannot be separated without disaster to the department and the foremen; secondly, it should be remem-

How 17 Minutes of Music Stopped a Production Slump



EVERY afternoon between 2:45 and 4:00 o'clock production took a nose-dive at one particular war plant. The reason: workers' nerves were getting on edge—fatigue was getting the best of them.

And then the management tried industrial music. A little in the morning—a little at noon—*and 17 minutes of it beginning at 2:45.* In less than 3 weeks, the production slump began to disappear—until it was finally gone. Now an even production level can be maintained—and workers feel better!

This is not an unusual case—similar results are being obtained in war plants all over the country.

The use of *planned* industrial music has helped to reduce Monday morning absences, to decrease petty ailments (headache, etc.) caused by "jangled nerves," to improve productive efficiency, and to improve morale generally. These are measured, *proved* results—results that can be *reproduced.*

Music can be used even in a noisy plant.

RCA Industrial Music Service offers you great flexibility—in timing, in selection of music, and in type of service. The Victor and Bluebird industrial library has been carefully selected from the vast RCA Victor treasure house of the world's best-loved music.

You also get the benefit of RCA psychological research in industrial music and its application.

The story of industrial music and what it offers you is told in the new book "Manpower, Music and Morale," sent free on request. Write for it today to: RCA, Dept. 70-29A, Camden, N. J.

FREE: This new 16-page book telling how to use music in industry, and what it can do for you. Ask for "Manpower, Music and Morale." Address: RCA, Dept. 70-29A, Camden, N.J.

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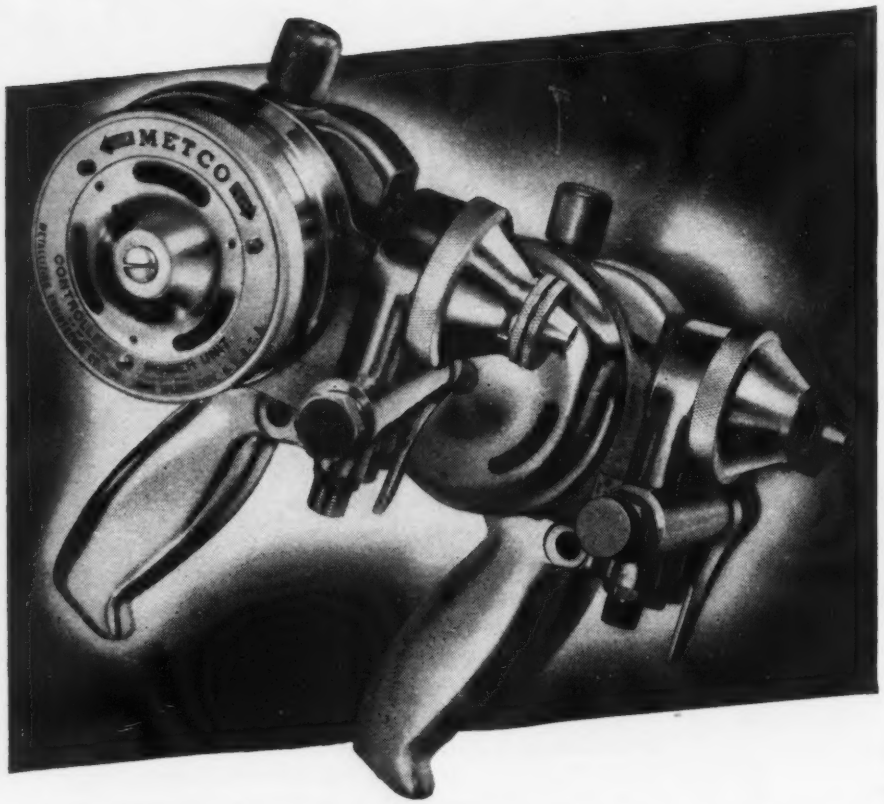
BUY MORE WAR BONDS

RADIO CORPORATION OF AMERICA

Gunning for Waste?



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Describes METCO Guns, Wires, Surface Preparing Tools and other Accessories in detail . . . tells how sprayed metal coatings are helping to save materials and manpower in the production and maintenance of war-needed parts and equipment.

NEW PARTS eliminated completely . . . costly rejects quickly salvaged . . . critical metals replaced by cast iron and carbon steel . . . manufacturing time reduced . . . green labor trained in a few hours . . . equipment paid for itself on the first job . . . these are typical reports from plants using METCO Metallizing Guns for production or maintenance. Two models—Type E and Type 2E—meet *your* price and priority needs.

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In Canada: B. W. Deane & Co., Ltd., Montreal

METCO
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WORLD'S FINEST METALLIZING EQUIPMENT

bered that the foreman is closer to the pulse of his workers than any personnel manager ever could be. He is, or should be, constantly with them hearing their comments regarding their work, home life, and other problems that beset them. He is in a position to guide, counsel, and sympathize with them before their troubles, which are usually small, get them down.

If he is a good foreman, he will rise above any petty favoritism and stand guard over the rights of his workers on the one hand and his superiors on the other. He is the perfect contact man in human relations, respected by his workers if he displays these qualities, and removed by his superior if he doesn't.

No personnel manager could possibly handle the job alone because he would require to have a working knowledge of the many operations of every department in order to talk the workers' language and settle their problems. So it would seem to me that the ideal setup is to train the foreman to be a personnel manager which is just what he is. How good he is depends on what common sense and justice he has in his head and his ability to rule with honesty and fairness on all questions.

I hope I haven't given the impression that personnel managers are not a necessary part of management. On the contrary, I think they are indispensable in any well organized plant. They should be advised of all problems handled by the foremen and the method of their disposal; they should be consulted on all problems that have any element of danger to the department or the management and should be prepared to sit down with the foreman.

As to hiring and firing, why shouldn't the foreman have a say in these important matters? He must work every hour of the day with the workers in his department and most certainly must have developed a keen knowledge of requirements for the various jobs in his department. How could he possibly maintain discipline if he were denied the right to discharge a worker?

Then again, if a foreman's duties in respect to discharging a person is to merely report infractions then he becomes, in the eyes of the workers, nothing more or less than a stool pigeon, despised by everyone including himself.

And suppose we did strip the foreman of all his work except production wouldn't we just make the personnel manager a glorified foreman?

FOREMAN

BUILT to "TAKE IT"

on Round-the-Clock Schedules

It didn't take a war to prove the superiority of Denman's Improved Box Loom Picker. Today's heavy production schedules merely serve to confirm the experience of leading textile mills that Denman Box Loom Pickers give you

IMPROVED BOX LOOM PICKER

- ★ TIME TESTED
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- ★ LONGER WEARING
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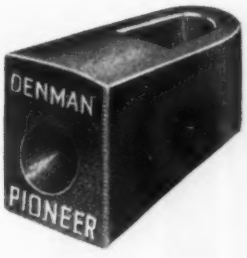
LOWEST COST PER LOOM PER YEAR



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The TERRELL MACHINE CO., *Inc.*

CHARLOTTE, NORTH CAROLINA

DARNELL

KEEP TURNING AND EARNING

DARNELL CASTERS & WHEELS Reduce the Overhead that is Underfoot." Minimum floor wear, maximum efficiency, durable service commend them to you.

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Write for FREE MANUAL

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LONG BEACH, CALIFORNIA, 36 N. CLINTON, CHICAGO, ILL

How to Get the Most From Control Instruments

(*Continued from page 88*)

8. What special provisions must be made on account of corrosion conditions?

ELECTRONIC INSTRUMENTS. We are now entering the Era of Electronics, according to Mr. Herr, and postwar use of electronic instruments in the textile industry will increase production, quality, and efficiency to a degree never before realized. Much of the electronic equipment which will be made available will be decidedly new, but some of it will simply be an improvement of design, or availability, of units that have already been introduced to a limited extent in industry.

One of the most widely adapted of the electronic principles to the textile industry is the phototube. General Electric has adapted this principle to its spectrophotometer, which can distinguish two million shades of color accurately, and automatically record them on a graph. Used as a control of shades in dyeing, this unit certainly has great possibilities. Another photoelectric device that has had only limited application to date is an automatic weft-straightening control. Applied to tenter dryers where the fabric is of such a nature that the filling threads must be kept straight as a quality requirement, this unit permits as much as 100% increase in dryer speeds.

Inexpensive photoelectric switches have been purchased by the thousands and applied by individual mill men in accordance with their own imaginative ingenuity to dozens of inspection, limit, and safety-control tasks that have been to the decided advantage of all concerned.

CONTROL OF MOISTURE. Perhaps the most important field for electronic instruments will be in the measurement and control of moisture. Moisture content of yarns and fabrics is a prime consideration of all textile manufacturers, and the frequent dampening and drying to which the materials are subjected plays an important part in final fabric quality. If the material is overdried in any one of the chain of process dryers, production efficiency in following processes is reduced, and final quality affected. Excessive moisture is equally harmful at some stages of production and is infinitely worse at some others.

Recently various instrument manufacturers have accepted the challenge of mill men to do something really

TEXTILE BANKING COMPANY

Factoring Service

Puts your sales on a cash basis
Strengthens your cash position
Relieves you of credit losses

55 MADISON AVENUE • NEW YORK

ELIMINATE THE HOME-FRONT
BOOBY-TRAPS
FROM YOUR PLANT

Oil and grease on your floors are booby-traps that make casualties of the soldiers of production, by causing slipping and falling accidents, seeping through floors onto workers and machines below, inviting costly fires, and side-tracking vital manpower into non-productive cleaning labor. Rid your carding, spinning, weaving, and finishing rooms of these aids-to-the-Axis quickly, efficiently and economically by spreading SPEEDI-DRI under mules and around machine legs and banking it at the base of looms. Write for free sample or demonstration.

AMERICAN THREAD COMPANY says:

"Since using SOL-SPEEDI-DRI," writes Mr. Joseph Atkinson, Supt. of Manufacturing, American Thread Company, "we have cleaned up a rather disagreeable condition in our Twisting Department, namely, wet and greasy floors, thus eliminating the slipping hazard. This has had a desirable effect on our twister tenders who now go about their duties with sure-footed confidence. In addition, it has improved the lighting in this department considerably."

SPEEDI-DRI
OIL AND GREASE ABSORBENT

SUPPLIERS

East
REFINERS LUBRICATING CO.
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Prompt Service from Warehouse Stocks in Leading Cities

constructive about the problem of controlling moisture content, and several direct-reading moisture controls have been offered as a solution. One of these controls, the Moist-O-Graph, employs an electronic circuit which permits accurate and consistent measurement of extremely high electrical resistance values. Since a definite relationship exists between electrical resistance and moisture content in a variety of materials, including cotton and rayon, it has been possible to calibrate the Moist-O-Graph in terms of percent of moisture and thus provide a new and practical tool for the direct measurement and control of this previously elusive element.

When the Moist-O-Graph is applied to a cotton slasher, for example, a small metal contact roll rides on the warp at the delivery end of the machine. A low-voltage, high-frequency current is applied to this detector roll, and some portion of it passes through the warp to a ground roll and back to the instrument to complete the circuit. The amount of current which passes through is a measure of electrical resistance and, therefore, moisture content, of the warp. By providing this instrument with a set of control contacts, and the slasher with a suitable variable-speed drive, it is then possible to set the control point for any desired moisture content, and the unit will automatically maintain this value by adjusting slasher speeds as required.

Handbook on Trade Dressmaking

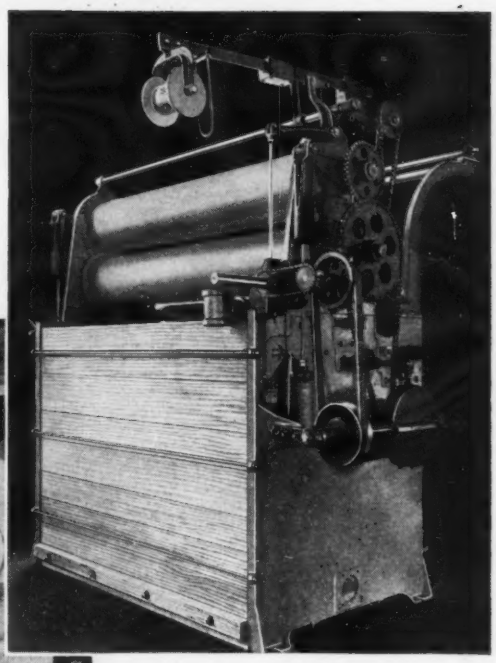
THE FUNDAMENTALS OF TRADE DRESSMAKING; by The University of the State of New York, The Board of Education of the City of New York; can be procured from Roy F. Johncox, Principal, Vocational High School, Rochester, N. Y.; $2.75.

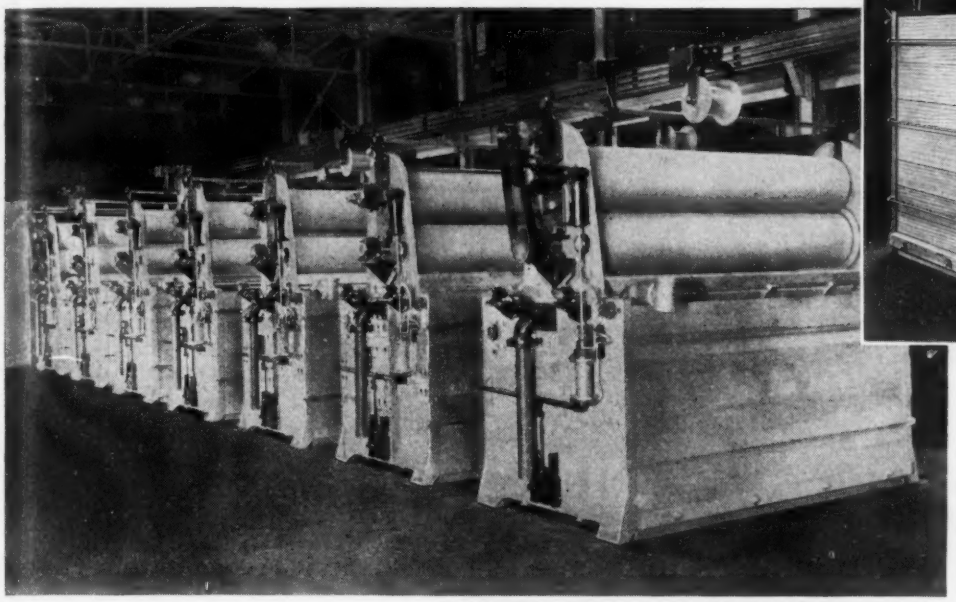
Intended as a guide for use by the shop teacher in trade dressmaking, this 374 page book, offset printed, covers the teaching of fundamentals in the dressmaking trade. The book is well illustrated and covers in logical order the fundamental steps, in related groups, necessarily covered by a teacher in the school system providing instruction on trade dressmaking.

Sections covered include dress design, draping and fitting, pattern designing, cutting, machine operating and the sewing of various units making up a garment, as well as tailored processes and pressing.

This book was prepared by Mrs. Margaret Furney, former Principal of Brooklyn High School of Women's Garment Trades, and a committee of 17 teachers.

HOW TO SCOUR OR NEUTRALIZE CLOTH AT HIGH PRODUCTIVE RATES WITH LOW POWER, WATER AND LABOR COSTS





THE new Hunter Continuous Washer is pictured on this page. It will scour cloth clean up to 35 yds. per minute depending upon the weight, blend or type of goods.

It affords continuity of production between fulling and drying. After the goods enter the Washer, they do not require any attention until they leave the Dryer. On leaving the Washer, the goods fall into a Scray, from which they can be picked up by a Scutcher. After they are opened by the Scutcher, they pass through a pair of heavy Pneumatic Squeeze Rolls and directly into the Dryer.

The use of the Hunter Continuous Washer saves space. In some instances, it will do the work of ten Dolly Washers in about one-half the floor space, and requires less than one-third the horse power required to drive its equivalent in Dolly Washers.

Four men should be able to run the Washer, Scutcher, Squeeze Rolls and Dryer, as against eight or nine men for the same production when Dolly Washers are used.

The Washer is ruggedly built with solid cast iron frames machined at contact points, and there are anti-friction bearings throughout. Heavy rubber covered squeeze rolls are furnished, which are equipped with either patented hydraulic or pneumatic tension control. Whip roll, stop motion, etc., are stainless steel. The machine can be stopped or started from seven different stations on the Washer, and all bowls are driven from one side shaft running in anti-friction bearings. The machine is very versatile, and will handle all weights and classes of goods.

For actual operating figures in well-known mills, you are invited to write to

JAMES HUNTER MACHINE CO.
NORTH ADAMS, MASSACHUSETTS
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RYERSON STEEL IN STOCK

Call Ryerson for any kind, shape or size of steel you need. Steel for manufacturing, maintenance or construction ...all products are available for immediate shipment from any one of the ten convenient Ryerson Steel-Service Plants. Ask for a stock list...your guide to steel.

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A Fresh Approach to Quality Control

(*Continued from page 81*)

in arithmetic or in some variation in sampling or inspection technique. An excellent illustration of the latter in the writer's experience was quality control on the breaking strength of duck. Some time after it was necessary to replace men operators with women in this job it was noted that the strength of the duck dropped steadily below the lower control limits. Investigation finally revealed the fact that amount of tightening of the jaws of the testing machine which the women operators applied was enough below that required to cause a drop in test results. Accordingly, a change in the testing technique was made to remedy this.

STATE OF STATISTICAL CONTROL. We cannot be assured that a state of statistical control has been reached until a sequence of 25 samples falls within control limits. If over a period of time 1 out of 35 successive points or not more than 2 out of 100 fall outside the control limits, then a state of control can be assumed for that period.

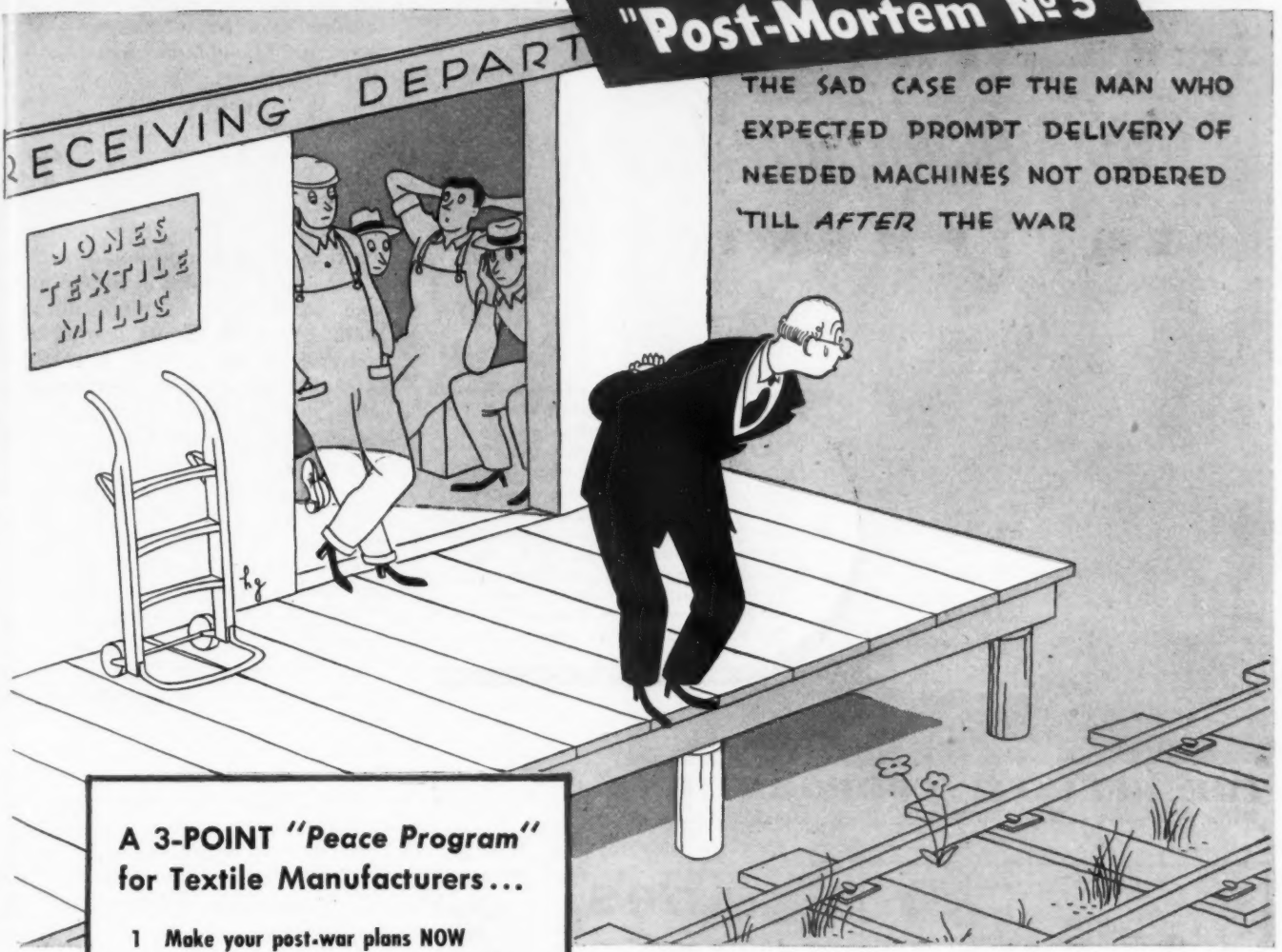
When the operation of statistical control has been completed, it will be found—if our estimated standard of 1.00 run (upon which manufacturing costs have been based) was conservative—that the control limits fall within, say, $\pm$ 5% of the average, instead of $\pm$ 8%. The standard can then be lowered to 1.03 run approximately. Such a situation has already been pointed out in the discussion of Fig. 2.

In some manufacturing operations the standard values and limits obtained after controlled manufacturing has been reached may fall outside the specification limits. If that is the case, either the specification must be changed or the manufacturing operation radically altered to obtain conformance to the specification. When the specification is an internal one, within one's plant, it can be changed. When the specification is the purchaser's, it is unlikely that it can be changed and, therefore, the judgment used in costing the product may be in error. However, the record of experience gained from the quality-control chart prevents a repetition of this in the future.

ADVANTAGES OF CONTROL-CHART METHOD. Six advantages of the control-chart method of controlling quality in textile manufacturing are as follows:

1. The simple operation of plotting

POST-WAR "Post-Mortem" №3


RECEIVING DEPART
JONES TEXTILE MILLS
THE SAD CASE OF THE MAN WHO EXPECTED PROMPT DELIVERY OF NEEDED MACHINES NOT ORDERED 'TILL AFTER THE WAR

A 3-POINT *"Peace Program"* for Textile Manufacturers...

1 Make your post-war plans NOW

don't let peace catch you without definite plans for products, markets, sales and production.

2 Decide on new equipment needs NOW

don't wait until the war is over before making a thorough survey of your production equipment and deciding what machines must be replaced.

3 Order your new equipment NOW

don't risk serious delay in securing necessary new equipment for post-war production. Metals and other basic materials will continue to be scarce for a long time after the war ends.

If you are going to need new dyeing and finishing equipment after the war, we earnestly recommend that you place your order with us *now*. Our "Post-war Purchase Plan" assures you prompt delivery when war restrictions are lifted. Write *now* for complete details of this plan.

The textile manufacturer who waits until the war is over to order needed new machines, very probably will find himself in an awkward situation, to say the least. The huge backlog of demand for new machines, dammed up by wartime restrictions, will break loose like a flood. Machinery manufacturers, still faced with continuing metal shortages, will be unable to meet *all* these requirements promptly. Result? A long wait for equipment by those who delayed their orders.

But the textile manufacturer who takes time now to *anticipate* his post-war requirements and place his orders, will be in the driver's seat. Without any interruption to your current war production, you should take stock of your future replacement requirements for dyeing and finishing machines. Then place your orders *now* for prompt delivery as soon as government restrictions are lifted.

Ask us about our "Post-War Purchase Plan"

SMITH, DRUM & CO., Allegheny Ave. at 5th St., Phila. 33, Pa.

Smith-Drum Machines Have Always Been a Long Step Ahead... In Design, Performance and Sales.

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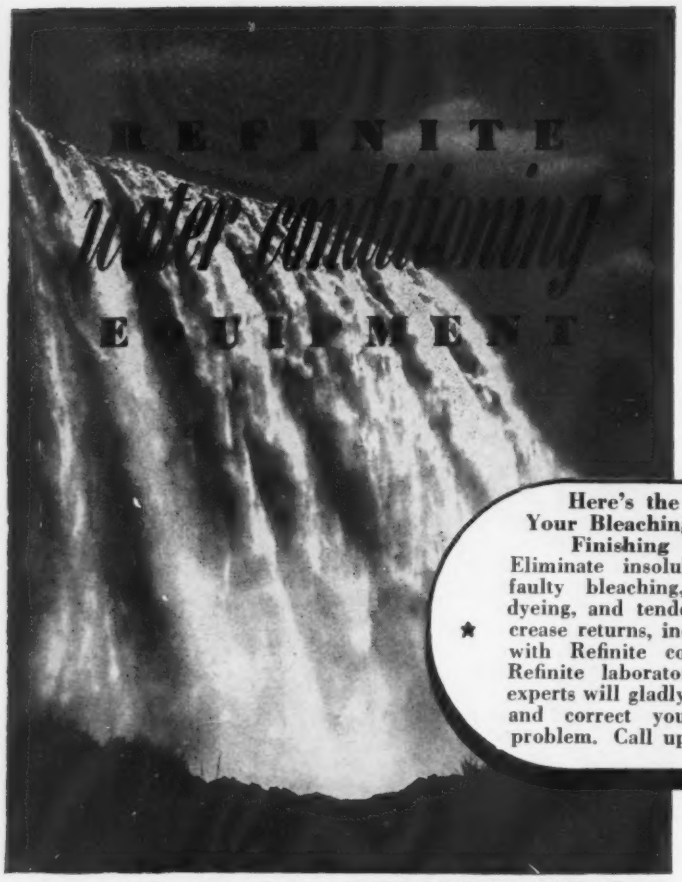
for hosiery dyeing, skein dyeing, package dyeing, beam dyeing, piece goods dyeing, package drying, skein mercerizing, warp mercerizing, hosiery inspection.



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KEEP your machines at top production with Maintenance and Repair Parts from our stock.

And because Genuine Lazenby Parts are manufactured according to specifications and design drawings, correct fit and satisfactory operation are assured.

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He's Our Boss NOW

Uncle Sam is getting all of our production efforts for the duration of the War.

But our research and development work is still going ahead and you will profit by its results in greatly improved machines for yarn throwing, as soon as peace returns.

U. S. ACME TWISTERS FOR SPOOL OR HEADLESS PACKAGE

U. S. JUMBO FACE DRIVE TWISTERS FOR LARGE HEADLESS PACKAGE WORK

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U. S. REDRAWS AND SPOOLERS

U. S. TEXTILE MACHINE CO.

SCRANTON, PENNSYLVANIA, U. S. A.

test data on a chart gives to foremen, superintendents, and manufacturing executives a quick grasp of past, present, and expected future quality levels that cannot be obtained merely by tabulating test data.

2. If the control limits are exceeded, it provides a definite assurance to the quality-control engineer or the department head that some change in quality has taken place during the manufacturing process. Thus, the question of whether or not action should be taken is not left to languish in the no man's land of conflicting judgments until the product is badly out of control. The converse of this is true. If the data show that control exists, then time and effort should not be spent in further reducing variation unless the manufacturing processes be radically changed.

3. The control-chart technique provides a record and assurance of the quality of production which safeguards against the tyranny of inadequate testing by the consumer—whether it be the Army or Navy, commercial testing organization, or textile manufacturer. Such testing can be flatly repudiated in the face of the manufacturer's control-chart record.

4. The method of rational subgrouping of data enables the quality-control engineer to locate causes of trouble sooner than by a non-systematic method of testing, as the sample out of control is associated by time with a particular lot of material and group of machines.

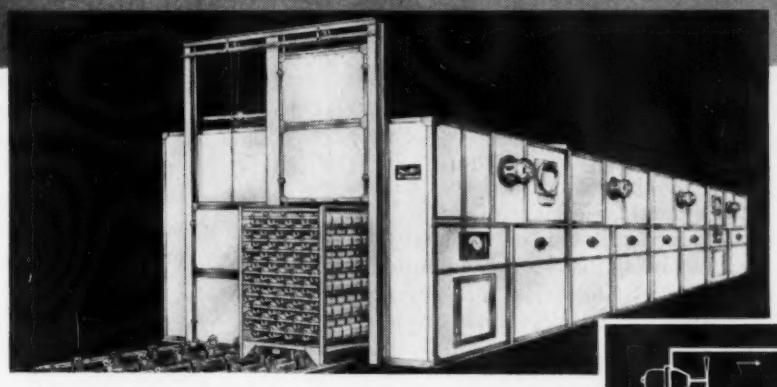
5. With controlled manufacture, which is shown by the control-chart method, variation in product quality is that resulting from chance causes only, and there is assurance that in the future production will maintain the same level of variability. Therefore, the average levels of quality can be brought down near to minimums of specifications with assurance that the sample of size N (5 bobbins in example given above) taken from production will not fall below the minimum. Consequently, substantial savings are obtained.

6. Attainment of a state of statistical control makes it possible to reduce the amount of testing, thereby decreasing inspection costs.

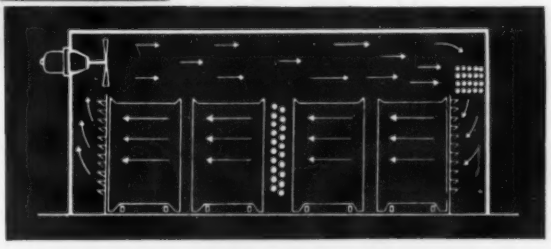
Thus it can be seen that the control-chart method of controlling quality aids in obtaining better quality and greater consumer satisfaction because of advantages 1 to 4, and results in economies in manufacturing because of advantages 5 and 6.

The foregoing discussion has attempted to show how the control-chart method of controlling quality can be applied to a typical textile manufacturing operation and the advantages to be obtained from its use. We

Controlled, Uniform Drying with the PROCTOR DRYER *for* RAYON IN CAKES



The Proctor Dryer for Rayon in Cakes may be built to meet individual capacity requirements. Illustration shows a two row wide machine.



Cross section shows interior of a four row wide Proctor Dryer for Rayon in Cakes, and indicates how accurate control is possible in this machine. The arrows indicate air-circulation across the width of the dryer. Location of heating units and direct motor drive fans are also shown.

In view of the high tensile strength required of the rayon tire cords so much in demand for vital war equipment, the proper drying of this rayon is of vital importance. It is in this stage that the future usefulness of the rayon can be either marred or enhanced.

For controlling the quality of rayon, Proctor & Schwartz research engineers have developed and perfected the Proctor Dryer for Rayon in Cakes. The design of this machine and the technique of its operation are one more result of Proctor Drying Research. This machine may be arranged to either take the rayon through the successive steps of drying, cooling, regain and conditioning or through drying only and deliver it dried with the desired moisture content dependably uniform. The superiority of this machine is proved by its close control and correct application of air circulation, as well as accurate control of temperatures, through the successive operations. Conditions may be adjusted to suit any rayon of heavy or light denier.

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TEMPERATURE and HUMIDITY
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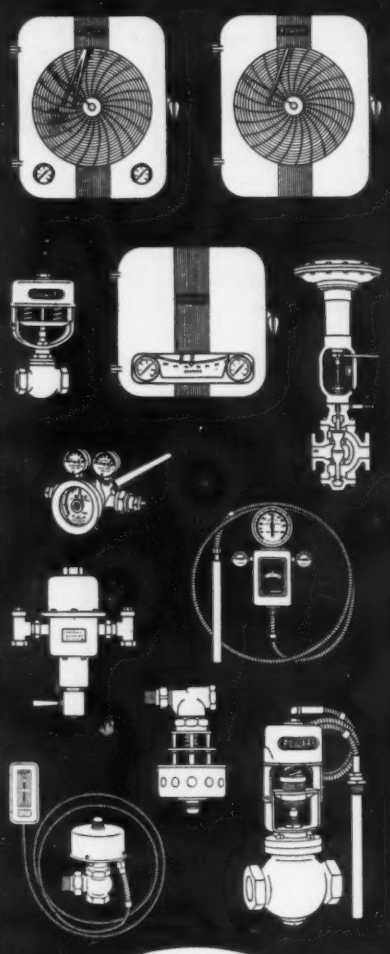

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should realize, however, that there are conditions which affect the utilization of these advantages in any type of textile activity. They may be classified into the following two groups: (1) Where the product is not subject to immediate, systematic, and quantitative evaluation of quality and, therefore, is not subject to systematic acceptance and rejection. (2) Where the product is subject to immediate, systematic, and quantitative evaluation of quality, and, therefore, is subject to systematic acceptance or rejection.

Condition No. 1 has been quite general in the textile industry in the past; i.e., goods are produced, but the consumer, in general, does not make immediate systematic, and quantitative determination of their conformance to quality standards. Instead, the manufacturer is forced to maintain quality by the customer's longtime, haphazard, qualitative experience with the manufacturer's output. If, through good manufacturing methods, quality (for example, wear life of a fabric) is maintained at a standard level $\pm$ 10%, it is not likely that increasing uniformity of product to $\pm$ 5% will be readily discerned by the individual consumer. Therefore, if a manufacturer is enjoying a profitable business with a quality variation of $\pm$ 10%, the arguments toward adoption of methods and processes designed to give a more uniform production having $\pm$ 5% variation are somewhat abstract, even though it might prove over a period of years to show savings because of lower claims for defective merchandise. In such situations the need for close control or statistical control of quality are not readily apparent, unless it happens that competitors adopt quality-control techniques which give better products.

Although many such situations exist in textile mills today, there are still cogent arguments for adoption of statistical quality control in these mills. The relationship of each department in a mill to the next one in the manufacturing operation is that of producer and consumer. The picking department produces prepared wool for its consumer, the card room; the card room, for the spinning room; the spinning room, for the dyehouse. Even though there may be no testing at these points or systematic attempts to evaluate quality, nevertheless the production of each department is subject to immediate, systematic, and somewhat quantitative evaluation of the product in the next department. If the stock is not well picked, the card room will complain and point to higher costs necessary because card speeds must be reduced to process the insufficiently opened and blended stock. If the roving is not well carded, the spinning

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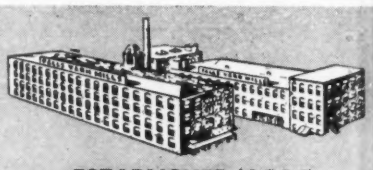

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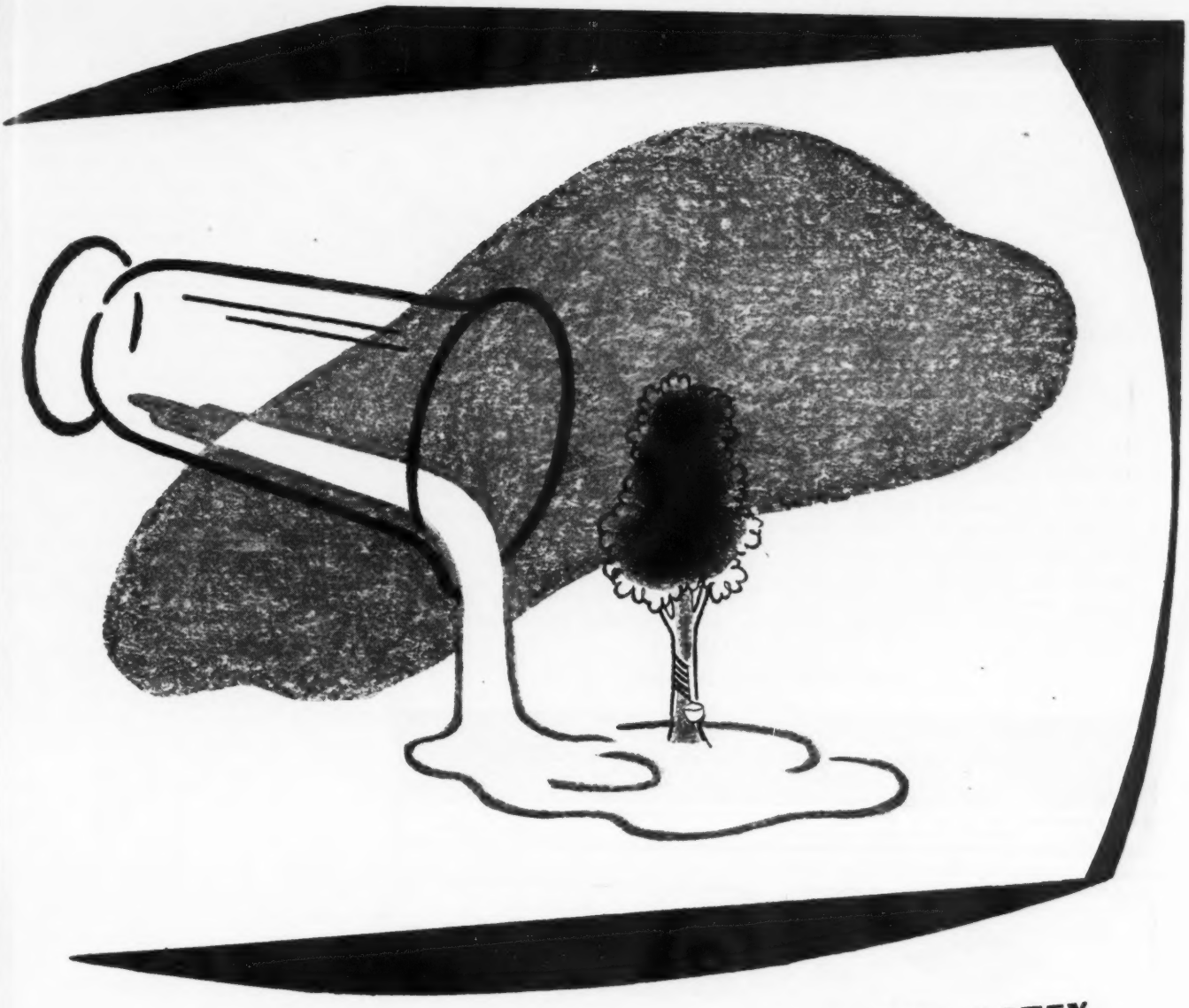

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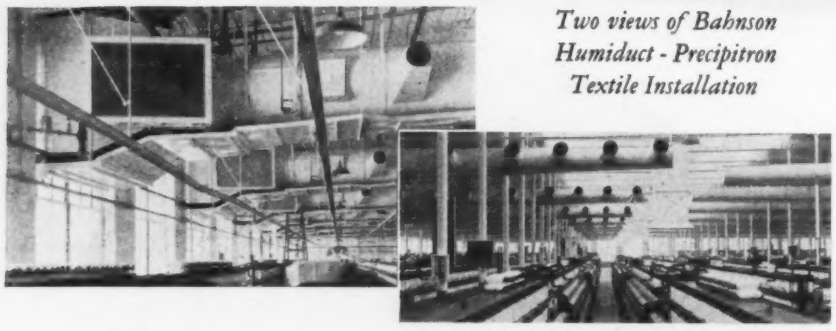
1944–a year for important developments



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BIG things are expected in 1944—in world affairs, and in industry.

Behind the scenes, research and technical development work have gone on, even as demands have grown and accumulated. New and higher standards in industrial air conditioning will, one day soon, become realities.

Bahnson has perfected improved systems of air conditioning for worker comfort, and production efficiency . . . as in the new HUMIDUCT system, available with electrostatic air cleaning, heating, cooling, dehumidifying, or in any combination—automatically controlled.

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"Scourcleans" are effective cleaning compounds applicable to all natural fibers and synthetics.

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★ *Activates the soap —*
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We invite you to try the "Scourcleans". Ask for free sample for trial on type of work you are doing.

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department complains of allowances that must be made to spinners for their lowered production. Thus, it is seen that even in mills where the need for closely controlling final product quality is not sufficient to induce action by management, closely controlling quality within departments of the mill can be appreciated and the economies effected demonstrated relatively quickly.

Condition No. 2—Immediate, systematic, and quantitative evaluation of quality, in general, has developed in the textile industry in the last 10 to 20 years. It is obvious that the more stringent the inspection of the product and comparison of it with standards, the greater is the need for controlled manufacturing. Excluding the interdepartmental relationships as a stimulus to controlled quality, there are three important factors in the textile industry today which provide immediate, systematic, and quantitative evaluation of quality. They are:

1. The Army and Navy specification, inspection, and test methods.
2. Growth of the commercial and buying organization testing laboratories for testing and inspection of clients or company purchases.
3. Development and growth within textile manufacturing organizations of quality-control departments which test and evaluate purchases of textile material from other textile mills.

Because of the emphasis that the Army and Navy place on purchase by specification and checking of quality of purchases by systematic inspection and testing, one would expect a gradual adoption of these techniques after the war, especially by large buying organizations, where the personnel in charge of purchasing may have held similar posts during the war in Quartermaster Depots. The Office of Production Research and Control of the War Production Board has done a tremendous job in educating industrial personnel throughout the country in statistical quality-control. The effect of this educational program will be felt by all industry. Therefore, we may expect Condition 2 to become an established fact in textile manufacturing and Condition 1 gradually to diminish. The control-chart method of controlling quality during production will aid in the solution of the many quality problems accompanying this new condition in the textile industry.

Further details on the control-chart method are given in the following publications: "A.S.T.M. Manual on Presentation of Data," American Society for Testing Materials, Philadelphia, "American War Standards Z1.1 and Z1.2—Guide for Quality Control and Control Chart Method of Analyzing Data," and "American War Standard Z1.3—Control Chart Method of Controlling Quality During Production," American Standards Association, New York. Other publication cited in the above article are: *Army Ordnance*, Vol. XXV, No. 139, July-August, 1943, "Quality through Inspection," G. Rupert Gause; and "Statistical Method from the Viewpoint of Quality Control," W. A. Shewhart and W. Edwards Deming, The Graduate School, U. S. Department of Agriculture, Washington, D. C.

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● The period of hurry—the need for faster production—won't be over with the war. Post-war work will impose its demands too. Get an Improved **WRIGHT** *SPEEDWAY* Electric Hoist as soon as possible for both now and tomorrow. Because it speeds up work and makes jobs easier, **WRIGHT'S** *SPEEDWAY* saves labor time, cuts handling costs—quickly pays for itself.

Women workers in war plants especially appreciate the push-button ease with which the **WRIGHT** *SPEEDWAY* is operated. The *SPEEDWAY* helps them maintain their morning vigor throughout the afternoon.

The *SPEEDWAY* Electric is a sturdy, light weight, cable hoist, designed for fast lifting on assembly floors and for general use. Designed with spur gear construction, magnetic control, and mechanical features found only in the more expensive production-type hoists. Yet it is priced economically low.

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Looking ahead with you into this new year, we feel safe in promising a reasonable supply of Devopake for essential painting in 1944. Supply problems are tough at times — as you well know. And, at the moment, we are working against a backlog of many thousands of gallons of Devopake. But difficulties put a premium on ingenuity and we count on being resourceful enough to supply you with this amazing paint for all necessary jobs.

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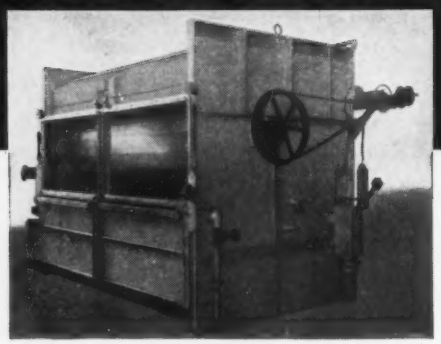

Promotes that wool like hand. Extra large drum type reel helps goods balloon, move around and change folds, while Multi-Grip partially knurled surface (Pat. Pend.) prevents slipping.

Wide adaptability and substantial savings in dyestuffs.

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Textile Industry Takes Renegotiation Complaints to Congress

(*Continued from page 93*)

in the state in which they were sold first. This would cover both cotton and wool but generally not the final products made from them. Exemptions on agricultural commodities would go back to business done after April 28, 1942.

The new over-all War Contracts Price Adjustment Board which would centralize control over renegotiations and review certain decisions of renegotiators, now handled by individual departments having contracts with industries, would be composed of five members, representing respectively the War, Navy, and Treasury Departments, Reconstruction Finance Corporation, and the Maritime Commission. The Senate Finance Committee recommends that a member of the War Production Board be included.

When Government and contractors or subcontractors disagree on renegotiation, there is now provision for a review of the case by the central Board as well as the courts. The House bill would permit contractors and subcontractors to take their case to the United States Tax Court for consideration. This Court would start from the beginning of the case with no reference to what renegotiators had decided already. The Court could raise, lower, or leave unchanged the amount of excessive profits that had already been decided; and its decision would be final. At the insistence of the Treasury, the Senate Finance Committee recommended the Court of Claims as the agency best suited to hear the appeals of contractors.

The House bill stipulates that an appeal could be made to the Tax Court on a ruling handed down under the old procedure. This means that a case could be reopened, even though both Government and contractor had previously reached a settlement. The proposed retroactive amendments to the law, it is estimated, would cost the Government about $500,000,000 in refunds to contractors already renegotiated.

The Senate Committee directed that profits remaining to war contractors, after estimated income and excess profits taxes, should be considered in determining whether the profits are excessive and should be renegotiated.

The House bill states that renegotiation proceedings would have to be started within one year after the end of the fiscal year of excessive profits or within one year after financial statements are filed by the contractor or subcontractor, whichever date is later. The Government, in turn, must reach a decision on any case within a year after beginning proceedings or drop the case, unless continued by mutual agreement. This does not apply to a review by the Board. The House bill terminates renegotiation powers with the end of hostilities. The Senate Committee, at this writing, is still in the process of considering the "cut-off" date.

Under Secretary of War Robert P. Patterson stated recently before the Senate Finance Committee that $5,300,000,000 had been saved by the Government in recapture of industry profits. He admitted that a large part of that figure would have come to the Treasury on excess profits if there had been no price adjustment law, but estimated a net saving of $1,500,000,000 had actually resulted from renegotiation. It was noted that no mention was made of the probable further taxes the Federal Government might have recaptured from corporate dividends that would have come out of disallowed profits, nor of the expense of industry involved in renegotiation.

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Your machinery, will have endured the continuous strain of war production. Naturally, you will desire that it shall be made adequate to fulfil the increased demands for clothing of all kinds.

As makers of machinery for the production of Worsted Yarns on both the English and Continental Systems, we shall be ready to put your plant in perfect order and so ensure maximum quality and quantity in post-war output.

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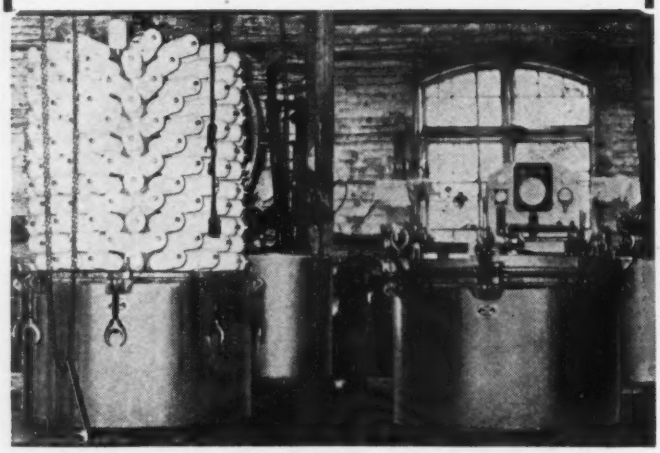

Model KRAG 407 Twin Package Spindles, Machine with Carrier.

The spindles on the model KRAG are placed horizontally on carrier, which makes for easy loading and unloading.

Two packages are loaded on one spindle, so that any desired flow of dye liquor can be obtained by the use of larger capacity pumps.

This model is ideal for the dyeing of tubes of cones as the outer circumference of the loaded cones increases in direct proportion to the larger bottom diameter of the tapered form of the cones.

The special feature of this machine is the built-in indirect heating cylinder which makes for even temperatures throughout the entire bath and consequent level dyeings of any shades sensitive to heat.

At the same time, it reduces the liquor ratio to a minimum thereby producing most economical dyeings, especially with vat colours.

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Aridye Corp., with offices in Fair Lawn, N. J., Rock Hill, S. C., and Providence, R. I., a subsidiary of Interchemical Corp., has purchased the business of Phoenix Color & Chemical Co., Paterson, N. J., taking over the newly acquired plant on Dec. 11. That plant is now being operated as the Phoenix Color Division of Aridye. M. Lincoln Schafer, who has been president of Phoenix, will continue in charge. Kenneth L. Dorman will be plant manager.

National Starch Products, Inc., have removed their New York offices to 270 Madison Ave., New York 16, N. Y.

J. E. Sirrine & Co., Greenville, S. C.—Jno. A. McPherson has withdrawn from his engineering partnership as of Nov. 10. He has been with Sirrine for 41 years.

Calco Chemical Division, American Cyanamid Co., New York, has purchased from Interchemical Corp. its United Color & Pigment Division, Newark, N. J., the business of which will be continued without change.

E. I. du Pont de Nemours & Co., Electrochemicals Dept., Wilmington, Del., has reappointed Milton Kutz as acting assistant general manager after an absence of 18 months for his health.

Sonoco Products Co.—C. H. Campbell, vice president in charge of sales, has been appointed by National War Labor Board as an industry member of the Fourth Regional War Labor Board with headquarters in Atlanta, Ga. He will spend one week out of every five in Atlanta.

E. I. duPont de Nemours & Co., Wilmington, Del., has appointed Frank Sanderson MacGregor to be general manager of the Electrochemicals Department, succeeding Dr. E. A. Rykenboer, who retired Dec. 31 on account of ill health. Mr. MacGregor joined duPont in 1916. He was lately assistant general manager of the Electrochemicals Department.

Emmons Loom Harness Co., Lawrence, Mass., has recently appointed Constantino N. Sabal as its Peruvian agent. He is located at P. O. Box 2288, in Lima.

McFalls-Houren Mfg. Co. has been organized at Gastonia, N. C., by Fred B. McFalls and John T. Houren, to promote the sale of newly developed and patented textile machinery, of which the company will do the greater part of the manufacturing. Principal product will be the new Day lease machine used in warping.

C. H. PATRICK, who is now representing the Pabst Sales Co. in the distribution of the desizing material, "Exsize," in the South with headquarters at Salisbury, N. C., as reported in these columns last month. Mr. Patrick has formed a sales and technical service for the textile finishing industry.

National Oil Products Co., Harrison, N. J.—Dr. Donald Price, technical director of this company's Organic Research Laboratory, addressed the Western Maryland Section of the American Chemical Society at the Algonquin Hotel, Cumberland, Md., Nov. 12 on

CELANESE CORP. OF AMERICA, in association with other chemical, rubber and petroleum companies, received the chemical engineering profession's "1943 Award for Chemical Achievement" for its significant contributions to the synthetic rubber industry. This sixth biennial award was made on Dec. 8 in New York at a dinner sponsored by *Chemical and Metallurgical Engineering*. Celanese contributed to the development of the butadiene process.

DID YOU KNOW?

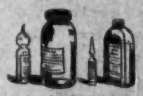
NATIONAL

supplies large quantities of

ADHESIVES & STARCH PRODUCTS

for the protective packaging of HUMAN BLOOD PLASMA.

for forming moisture-vapor-proof cartons for PLASTER OF PARIS (bone setting).



for waterproof labeling of vials, ampules, bottles, etc.

for sterilization-proof sealing of bandages, cotton, etc.

for sizing surgical gauze.

for promoting the growth of life-saving PENICILLIN.

for making & sealing envelopes of powdered sulfa drugs.

for labeling molded plastic containers of malaria preventive.

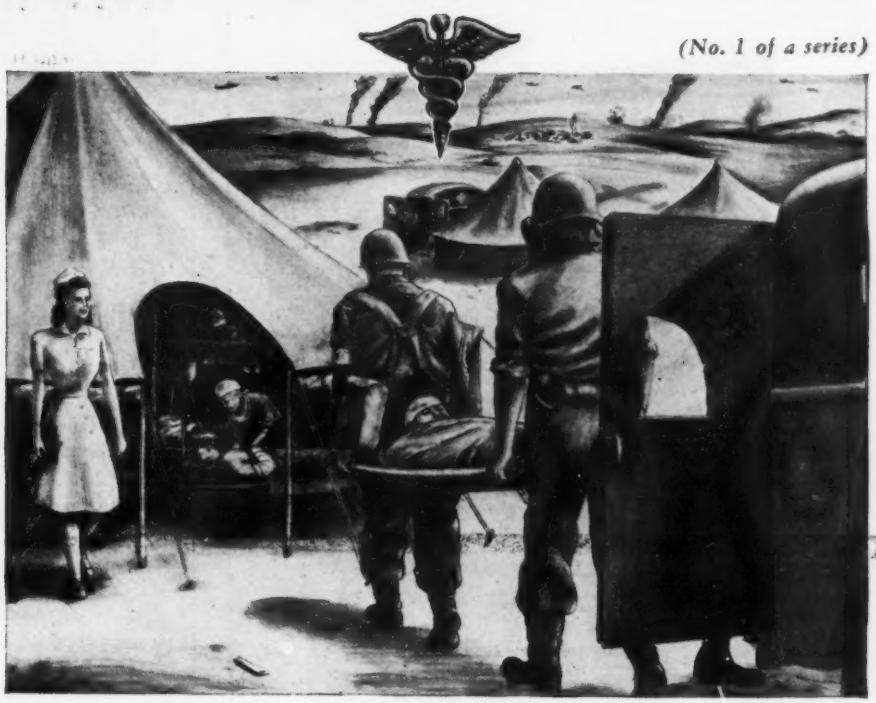
for molding sulfa, aspirin, and other tablets.

for sealing & labeling immersion-proof shipping cases and liners.

&

for many other purposes important to the MEDICAL DEPARTMENT in treating the wounded, comforting the sick, combating disease, strengthening the weak, and mending the broken of body or spirit.

(No. 1 of a series)



THE U. S. ARMY

MEDICAL DEPARTMENT

soothes PAIN . . . saves LIVES

ARMY doctors, nurses, ambulance drivers, stretcher bearers...with utter disregard for their own personal safety... work tirelessly to soothe pain and save lives on the battlefronts.

Medical Supply Officers here at home procure what is needed to carry on... under the most difficult of conditions...this great work of mercy.

National is proud of its record with the Medical Department... its humble contribution to the gigantic task of supplying field and base hospitals with life-saving medicaments... safely, efficiently, and on time.

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RAYON and *Certified* CLIMATE

PRODUCT of research and imagination, Rayon started from scratch. No traditions like—"We have always done it this way."

RAYON would never have been what it is without Air Conditioning. Meaning Air Conditioning of the right sort, designed for the work it had to do—by engineers of experience who could recognize what the work was.

In Rayon Processing

Quality is continued—
Quantity is quickened—
Costs are clipped—

by PARKS Certified Climate

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Parks-Cramer Company

Fitchburg, Mass. Boston, Mass. Charlotte, N. C.

"The Chemistry of Surface Active Agents."

Celanese Corp. of America, New York, plans the erection of a new plant near Corpus Christi, Texas, for large scale production of a wide range of chemicals. The plant, expected to cost in the neighborhood of $5,000,000, will be built with private funds and is expected to be in operation during the latter part of this year. The 300-acre site is at Bishop, in Neuces County, about midway between Corpus Christi and Kingsville. Among the chemicals to be manufactured are acetic acid, acetone, methanol and formaldehyde. Completion of the Texas project will give Celanese its eighth plant. At present the corporation has yarn producing plants at Cumberland, Md., and Narrows, Va.; a yarn spinning plant at Burlington, N.C.; weaving mills at New London, Conn., Williamsport, Pa., and Staunton, Va., and a plastics plant at Newark, N. J.

Solvay Process Co.—Richard G. Zimmer, formerly of Solvay Process Co., Baton Rouge, La., has been appointed manager of Brunner Mound Canada, Ltd., Amherstburg, Ont. He succeeds C. K. MacFetridge, who has been transferred to the head office of Solvay Process Co. at Syracuse, N. Y.

Charles B. Paulus, Philadelphia, Pa., who for a number of years was associated with Laconia (N. H.) Needle Co., as Southern and Middle Atlantic States representative, is no longer connected with them.

Philadelphia (Pa.) **Quartz Co.** has added Harold R. Hay, formerly with the U. S. Dept. of Agriculture, Northern Regional Laboratory, Peoria, Ill., to its sales development staff.

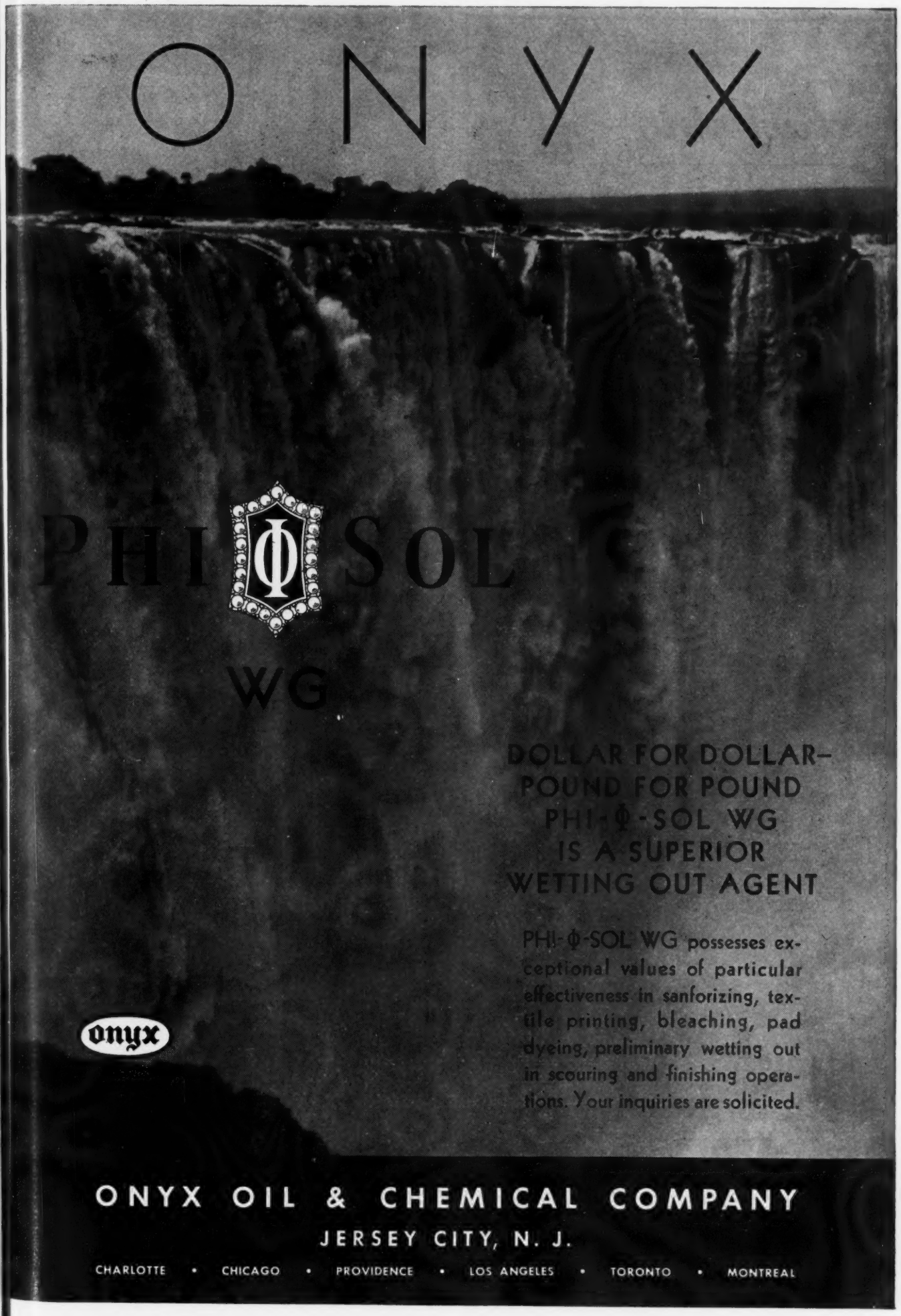
FRANK SANTELLI, private U. S. Army, now in the Pacific theater and previously in the sales department of Willcox & Gibbs Sewing Machine Co., who, while on duty in a remote island, found three W. & G. lockstitch sewing machines mounted on 7B individual tables in active use in a native village, hundreds of miles from usual trade routes. He said they were being very skillfully used.

Seal-Sac, Inc., Fall River, Mass., has moved its executive offices from Fall River to New York at 6 East 39th St. The plant at Fall River and branch offices at Chicago, Los Angeles and San Francisco will remain at present locations.

Nuodex Products Co., Elizabeth, N. J., has added Harry W. Howard to its staff. Mr. Howard who has been with Egyptian Lacquer Co. and Valentine & Co. on research problems, has lately been with the Chemical Division of WPB.

Pittsburgh Plate Glass Co., Columbia Chemical Division, has completed the erection of the largest chlorine plant ever

YALE & TOWNE MFG. CO., Philadelphia—The Army-Navy "E" award was made to this company on Oct. 29 by Lt. Col. Purchell of Army and Lt. Lapres of Navy. Above is shown the unfurling of the "E" pennant by J. C. Morgan, general manager (left) and Henry S. Walters (right) as W. Gibson Carey, Jr., president of the company, Lt. Col. Purchell and Lt. Lapres look on.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WG
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POUND FOR POUND
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PHI-Φ-SOL WG possesses exceptional values of particular effectiveness in sanforizing, textile printing, bleaching, pad dyeing, preliminary wetting out in scouring and finishing operations. Your inquiries are solicited.
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Factoring CAN SOLVE

POST WAR PROBLEMS

Credit checking will become more and more difficult after the war due to changing economic conditions.

Likewise the need for more working capital to increase production and sales in order to meet competition will be necessary.

With nearly ninety years of service to Manufacturers, Merchants and Selling Agents, we offer a plan to relieve credit and financial worries.

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James Talcott, Inc.

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Southern Correspondent

Clarence Knowles, Atlanta 3, Ga.

ORDNANCE BANNER TO ACME STEEL CO., CHICAGO—Award was made on Nov. 22 in recognition of the company's supplying Ordnance with normal and emergency demands promptly and with the greatest degree of cooperation. Capt. L. C. McEvoy (shown at left), an Ordnance officer, made the presentation to employee representatives of the Acme office and factory.

built as a single unit east of the Mississippi River. The H. K. Ferguson Co., New York, were the engineers and builders. Located at Natrium, W. Va., the new plant was constructed on schedule and has been in operation for more than a month. It was financed by Defense Plant Corp. The plant also produces caustic soda as a co-product.

Interchemical Corp., New York, has organized the Trade Sales Division to become the official outlet for all consumer products developed by Interchemical, its divisions and subsidiaries, with home offices and factory at Paterson, N. J.

Brown Instrument Co., Philadelphia—Practical aspects of automatic control will be discussed in a series of talks to be given during the winter by W. H. Steinkamp, assistant general sales manager of Brown Instrument Co. The first of these lectures was given by Mr. Steinkamp on Nov. 19 before the Engineers Club of Detroit, Mich.

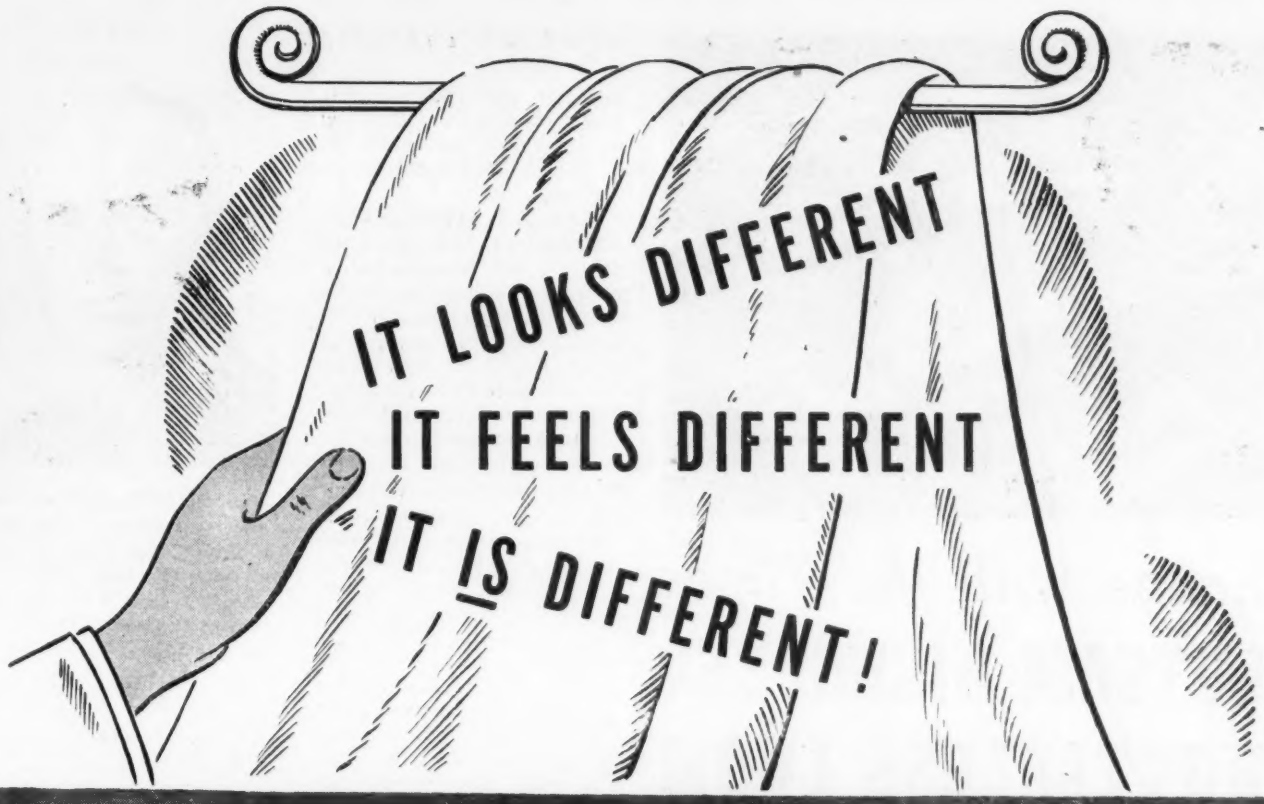
American Viscose Corp., New York, is distributing a series of informative leaflets to give consumers and retailers basic information about rayon and how to care for rayon garments to obtain maximum wear and serviceability. Largely in response to requests, more than 2,500,000 of the leaflets have been distributed to date.

Monsanto Chemical Co., St. Louis, Mo., has appointed J. Handly Wright of Birmingham, Ala., as director of its Department of Industrial and Public Relations, effective Dec. 1. For the last 4½ years Mr. Wright has served as executive vice-president of Associated Industries of Alabama. In his new position with Monsanto he will have charge of advertising, public relations, industrial and labor relations, safety program, and company publications.

American Pulley Co., Philadelphia, reports that Archie Chandler, vice-president, has retired from active sales management of the company, but will continue as vice-president, returning to his former home in San Francisco, where he will direct the company's sales and service on the West Coast. He has been with the firm since 1915. Frank E. Brown, for 15 years assistant sales manager, has been named to succeed Mr. Chandler as general sales manager.

B. F. Goodrich Co., Akron, Ohio—Charles H. Kavanel has been appointed manager of the Truck and War Products Department of the National Sales and Service division. He succeeds E. F. Tomlinson, recently named general manager of the Industrial Products Sales Division.

Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc., Passaic, N. J., observed its golden anniversary on Oct. 28 and received its Army-Navy "E" for excellence in production on that day. No special anniversary ceremonies were held because War Department rules forbid any other observance on the day the "E" award is received. The firm, which has operated for 50 years without the loss of a single working day, started in the middle of a depression, with 40 employees in a building



WHEN SPUN or FILAMENT RAYONS ARE TREATED WITH

KOPAN

PATENTS PENDING TRADEMARK REG. U.S. PAT. OFFICE

PERMANENT CELLULOSE FINISH

KOPAN creates a richer, a fuller, a more serviceable rayon — with an *abrasion resistance far greater than the original fabric.* « « « KOPAN is new and versatile. It has exciting possibilities for dress goods, damasks, shirtings and other fabrics. If you're looking for a "lift" to your production and your profits — ask about KOPAN now. Our technical staff is ready to cooperate.

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Chemicals for Every Phase of Textile Processing

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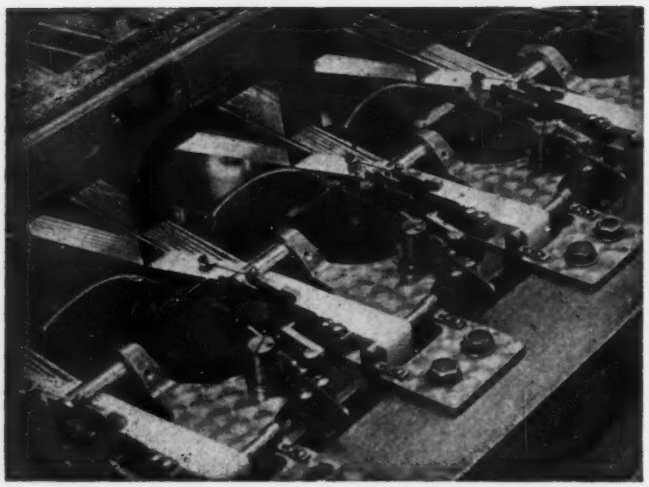


Change with the Times

CLUTSOM HIGHSPEED SHUTTLELESS LOOM

We are still planning for War but many executives are planning ahead for Peace too.

Vast production of narrow fabrics will be needed after the war and the trade will go to those mills best equipped. It is time to consider weaving in the modern way, time to discard the old, time to think in terms of speed and high production at lower cost. Time to change with the Times.

Why not let us give you a demonstration of weaving in the modern way—those old type looms must be wearing out under the wartime beating they are taking.

CLUTSOM MACHINES INC.

205 EAST 42 STREET NEW YORK

Telephone MUrray Hill 4-2327

FACTORY: Springdale, Connecticut

50 x 150 ft. The company now operates in over 1,000,000 sq. ft. of floor space, and has 1,330 of its staff in the Armed Services.

Fairbanks, Morse & Co., Chicago, Ill., has promoted O. O. Lewis, formerly branch manager at Atlanta, to the position of assistant general sales manager of the company at Chicago. G. N. Van Epps, formerly manager of the Diesel Department, Chicago branch, has been promoted to manager of branch at Atlanta.

Atlas Powder Co., Wilmington, Del., as established a central research laboratory near Wilmington to allow for necessary extension of research programs vital to the war effort and to relieve the crowded conditions of present facilities. Dr. R. S. Rose, Jr., present director of the Atlas research laboratory facilities at Reynolds, Pa., will be the director of the new central laboratory, the first unit of which is nearly complete.

General Electric Co., New York, has appointed Frank W. Warner to succeed Henry M. Richardson as chief engineer of the Plastics Divisions.

Wickwire Spencer Steel Co., New York, has appointed Robert T. Dunlap as general superintendent of the Buffalo Works of the company. Mr. Dunlap was recently appointed assistant to the president of Wickwire and now assumes his new duties to replace the former Buffalo general superintendent, William A. Steel, resigned.

Cochrane Steam Specialty Co., Boston, Mass., have added Joseph L. Dudley to their organization. Mr. Dudley was formerly with Jackson & Moreland Engineers and with Stone & Webster Engineering Corp.

Wheelco Instruments Co., Chicago, has added the Cochrane Steam Specialty Co., Boston, to serve with George W. Hall, the company's present New England representative. C. L. Clark, formerly at the company's Cleveland office, has been placed in charge of a western New York office in Buffalo. Charles D. Mount has been named sales and service representative for southern Ohio and northern Kentucky, with headquarters in Cincinnati, while H. E. Holling has been appointed northwestern Illinois representative with headquarters in Peoria.

Cowles Detergent Co., Cleveland, has appointed C. W. MacMullen, formerly with Rohm & Haas Co., as its technical director.

C. V. TOPLIFFE, who has been appointed manager of the Boston district office of Cutler-Hammer, Inc., Milwaukee, Wis. Mr. Topliffe started with Cutler-Hammer, Inc., in 1924 at the main plant.

Cocker Machinery & Foundry Co., Gastonia, N. C., has purchased from Jacob Ziskind the business of the former T. C. Entwistle Co., Lowell, Mass., which will be moved to Gastonia where the Entwistle line of warpers, beamers, etc., and replacement parts will be made.

National Aniline Division, Allied Chemical & Dye Corp., has transferred Lawrence H. Flett from the Buffalo plant to be director of New Products Division of sales department, at New York.

Mathieson Alkali Works, New York.—E. M. Allen has retired as president but continues as chairman of the board. He is succeeded as president by G. W. Dolan, executive vice-president since 1941.

Woburn Chemical Corp., Harrison, N. J., is new name of Woburn Degreasing Co. of N. J.

Wyandotte (Mich.) **Chemicals Corp.** reports that I. H. Taylor, vice president in charge of sales, has resigned to devote his entire time to his duties as president of Merchants Chemical Co.

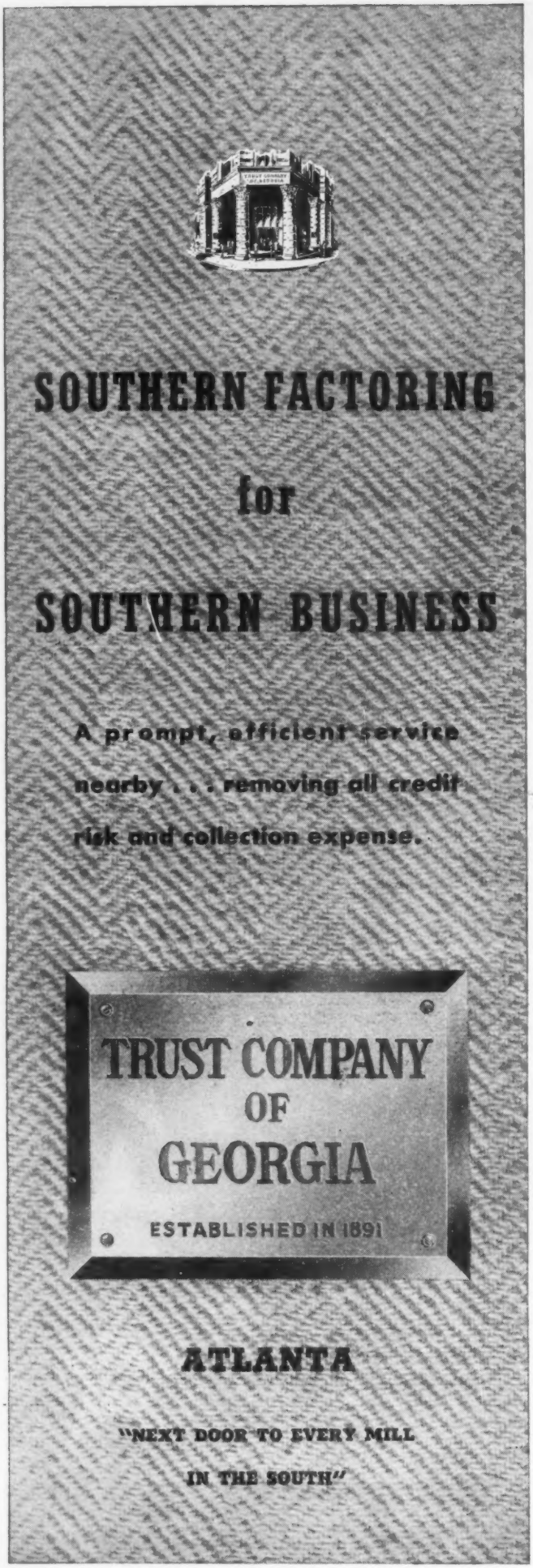
General Dyestuff Corp., New York, has appointed Sumner H. Williams as manager of its southern office at Charlotte succeeding the late B. A. Stigen. Mr. Williams was assistant manager at Charlotte for many years.

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has appointed Leon R. Ludwig as manager of its motor division. He succeeds R. W. Owens, resigned.

Textiles Need Alkalies

Silk and rayon for parachutes . . . wool for clothing . . . cotton for countless essentials. Whatever natural or synthetic fabric our fighting forces require, you can be sure alkalies and related products have been used in one or more processes of manufacture. In war as in peace alkalies are indispensable!

SOLVAY SALES CORPORATION *Alkalies and Chemical Products Manufactured by The Solvay Process Company*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SOUTHERN BUSINESS
A prompt, efficient service nearby . . . removing all credit risk and collection expense.
TRUST COMPANY OF GEORGIA
ESTABLISHED IN 1891
ATLANTA
"NEXT DOOR TO EVERY MILL IN THE SOUTH"

NEWS ABOUT Men

J. Lee Bausher, president of Infants Socks, Inc., Reading, Pa., has been named chief of the children's hosiery unit of the Hosiery Section of WPB.

H. J. Haynsworth, Jr., is president and treasurer of the newly-organized Ottary Textiles, Inc., Greenville, S. C., recently chartered to manufacture and convert textiles. **Paul Farmer** is secretary.

John R. Crawford, formerly vice-president and sales manager, has succeeded **George R. Urquhart** as president of Manville-Jenckes Corp., Manville, R. I., and **C. R. Steedman** succeeds him as treasurer. Mr. Urquhart has resigned to become vice president of Commercial Investment Trust of New York. He was originally a banker and became associated with the textile firm as its receiver in 1931. Mr. Crawford has been with the firm for 30 years, starting in 1909 as an office boy.

Donald J. Brightman has been appointed general sales manager of the Textile Division of United States Rubber Co., in charge of sales and distribution of all products now being made in the company's five textile mills.

Dr. William P. Jacobs, executive vice-president of Cotton Manufacturers' Association of South Carolina, has been named by the Federal Security Agency as one of a committee of seven to draft a national physical fitness program.

Frank H. Deknatel has been elected vice president of Bigelow-Sanford Carpet Co., Thompsonville, Conn. Mr. Deknatel will also continue in his capacity as treasurer of the company.

John E. Reeves, nephew of the president, **John M. Reeves,** was elected a director and a vice president at the recent annual meeting of the board of directors of the Mills mill at Greenville, S. C.

George S. Elliott, secretary-treasurer of Dallas Mfg. Co., Huntsville, Ala., was elected president of the Alabama Cotton Manufacturers Association by the directors on Dec. 17 to fill the unexpired term of D. H. Morris Jr., who died early in the month. Mr. Elliott was previously vice president of the association. **J. T. Phillips,**

C. W. Bendigo Joins TEXTILE WORLD Staff

On Jan. 1, C. W. Bendigo, formerly of Judson Mills, Greenville, S. C., and a contributor of ten-years' standing to the columns of TEXTILE WORLD, joined this publication's editorial staff in New York.

Mr. Bendigo was born and reared in Pennsylvania. He attended Ursinus College and later the University of North Carolina, where he completed a course in journalism. After a brief experience as newspaper reporter in Greensboro, N. C., he became connected with the Adams-Millis Corp., High Point, N. C., and later joined Glen Raven Silk Mills, Burlington, N. C., to become eventually assistant superintendent of that plant.

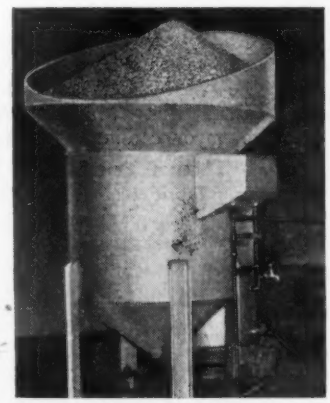
In 1935 he took a position with Burlington Mills, Mooresville, N. C., first as throwster on crepes, later as assistant technician, and finally as superintendent of its largest combination yarn plant. In 1940, he went to Judson Mills, forming its technical and engineering department with the title of superintendent of research. While at Judson he coordinated a similar department at Laurens Cotton Mills and was technical advisor to Abbeville Mills.

SALTY SAYS:

"ON THE LEVEL... 100% SATURATED BRINE ASSURES LEVEL DYEING!"

"ARE YOU having trouble eliminating spotting, streaking and white edges? Then you ought to switch from dry salt to brine. You see... brine disperses *evenly* throughout the vat... there are no undissolved crystals to ruin the dye-lot. Only you *must* use a 100% saturated brine.

"And that's easy when you install a Lixate Dissolver! It produces a brine of absolutely 100% saturation and 100% clarity—a brine unobtainable with ordinary stirring-type devices—whether manual or machine operated. To prove Lixate Brine's 100% saturation to your own satisfaction, you need but take a single reading with a salometer!



"Here's the Lixator installed at the Warren Fabrics Co., Inc., West Warren, Mass."

"Further, a Lixator will cut your costs. It requires no power for it has *no* moving parts! And it doesn't cost you a fortune to install. In fact, you merely lease the Lixator at a very nominal annual sum. Then up goes the efficiency of your operation and down go production costs. The Lixator requires 10% to 20% *less* salt —utilizes inexpensive Sterling Rock Salt.

"Not only will the Lixator help you to achieve level dyeing... it will give you *perfect* zeolite water softener regeneration every time. You couldn't ask for more!"

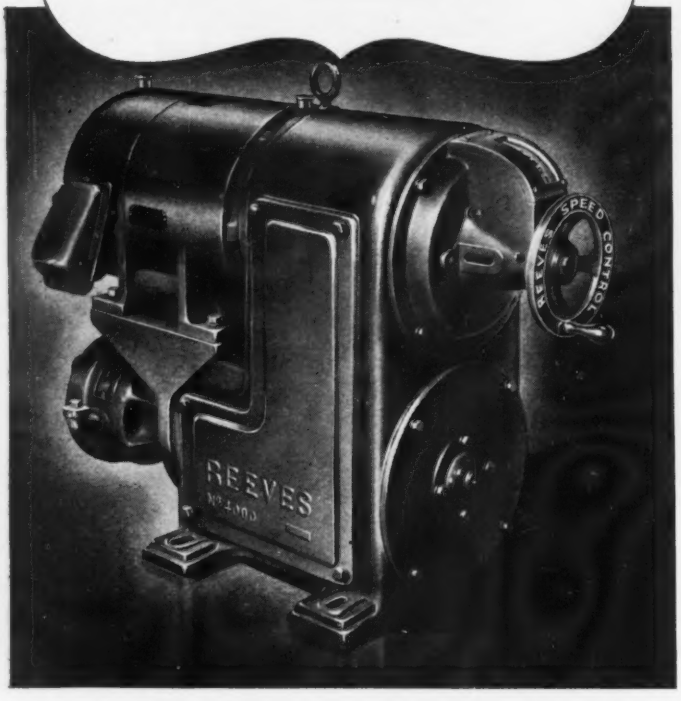
"IT'S FREE!"

"Let me send you this new 36-page fully-illustrated booklet on the Lixate Process for making brine. It gives you all the facts—installations, brine tables, diagrams, formulas. Just write for *your* copy!"

The LIXATE *Process*
Reg. U. S. Pat. Off.
for making brine

INTERNATIONAL SALT COMPANY, INC., DEPT. T-1, SCRANTON, PENNSYLVANIA

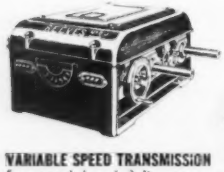
MOTOR *plus*
VARIABLE SPEED *plus*
GEAR REDUCER



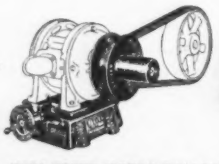
ALL IN 1 COMPACT UNIT

★ This is the REEVES Motodrive. It is a complete, streamlined variable speed power plant consisting of constant speed motor—any standard make—variable speed mechanism, and gear reducer. Installed on any production machine, it provides highly efficient driving power at variable speeds—not just a few step-speeds, but any speed between predetermined limits. . . . The Motodrive is one unit in a complete line built by REEVES. So important are these variable speed units to manufacturing and finishing processes that they are standardly furnished on most leading makes of textile machines. Easily installed on machines in service. Send for copy of new Catalog W-435.

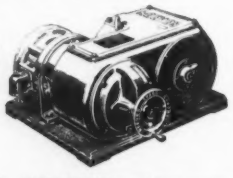
REEVES PULLEY COMPANY • COLUMBUS, INDIANA
Recognized Leader in the Specialized Field of Speed Control Engineering



VARIABLE SPEED TRANSMISSION for providing infinite, accurate speed flexibility over wide range, 2:1 to 16:1 incl.



VARI-SPEED MOTOR PULLEY converts any standard constant speed motor to a variable speed drive.



MOTODRIVE combines motor, speed varying mechanism and reduction gears in single unit. Speed ratios 2:1 to 6:1.

REEVES Speed Control

president and treasurer of Buck Creek Cotton Mills, Siluria, Ala., treasurer of the association was elected vice president which he will hold in addition to the treasurership. Terms expire in April, 1944.

R. G. Knowland, vice president in charge of production for Bigelow-Sanford Carpet Co., New York, resigned Jan. 1 after 15 years with the company. He will retire to his home in the Berkshires.

Joseph F. Merten has resigned from Burlington Mills to join the rayon division of Iselin-Jefferson Co., New York, where he will be associated with quality control work.

John Shireman, chief of the Knit Goods Branch of WPB and **H. Gordon Mullen,** consultant to that branch, have resigned. Mr. Mullen has become assistant to the president, **T. H. Muller,** of Julius Kayser & Co.

William M. Pittendreigh, formerly on research staff of Judson Mills, Greenville, S. C., has been promoted to superintendent of research, succeeding **C. W. Bendigo,** who resigned that position to become assistant editor of TEXTILE WORLD, as detailed in another page of this department.

Henry L. Holshouser, associated with Finer Full-Fashioned Hosiery Co., Charlotte, N. C., for the last 14 years, has been promoted to vice president of the company. He will also be superintendent.

R. Z. Cates, president of Arkwright Mills, Spartanburg, S. C., is president of the new Southeast Air Lines, Spartanburg, recently organized with authorized capitalization of $50,000.

Ruth Joan Schoenberg has been made executive vice president of Marvin Textile Associates, Inc., New York in charge of sales and promotional activity. This new organization will concentrate on research and planning, styling and merchandising of quality fabrics.

W. Donald Munson, vice president and general manager of Southern Chemical Cotton Co., Chattanooga, Tenn., has been elected president, succeeding **D. Hewitt Wood,** who has retired at his own request.

Homer Whelchel of the Central Franklin Process Co., Chattanooga, Tenn., has been elected chairman for 1944 of the South Central Section of the American Association of Textile Chemists & Colorists. He succeeds **Jack Anderson** of Peerless Woolen Mills, Rossville, Ga. **J. A. Crumley,** of Hosiery Processing Co., is the new vice chairman.

Boyce C. Bond, textile dye chemist for General Dyestuff Corp., has been elected chairman of the Philadelphia Section of the American Association of Textile Chemists and Colorists. He succeeds **James P. Conaway,** purchasing agent of Delta Finishing Co. **Arthur W. Etchells,** of Helwig Silk Dyeing Co., is the new vice chairman.

Max Mann of Monarch Piece Dye Works, New York, has been elected president of the Salesmen's Association of Textile Dyeing & Printing Industry. He succeeds **Sidney Weinstein** of American Textile Processing Co.

M. Weldon Rogers, formerly general superintendent of Chadwick Hoskins Mills, Charlotte, will succeed **G. L. Chandler,** of Gaffney, who retired Jan. 1 as vice-president and manager of manufacturing of Jackson Mills, with plants at Iva and Wellford, S. C.

John E. VanNest has joined the Textile Research Department of American Viscose Corp., at Marcus Hook, Pa., where he will assist **Howard E. Shearer** in the Industrial Division. Mr. VanNest was formerly with Winthrop Spinning Co., and Wilton Winthrop Mills, as assistant superintendent at both plants. Prior to this he was associated with the Dana Warp Mills as overseer of rayon carding and spinning.

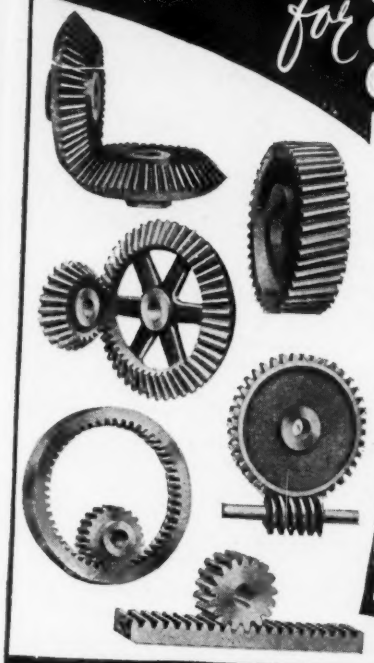
Thomas Pennington, formerly fabric technician with A. M. Tenney Associates, Inc., New York, has accepted a position with the Field Service Engineering Dept. of Owens-Corning Fiberglas Corp.

E. C. Sherman, general manager of Standard-Coosa-Thatcher Co., Chattanooga, Tenn., was elected to the board of directors and also named vice president and general manager of the company. **Shannon Gamble,** assistant treasurer, was elected controller. Reelected were J. S. Verlenden of Philadelphia, chairman of the board, and R. C. Thacher, president.

W. M. Melton is manager of the new mercerizing unit of Pisgah Mills, Brevard, N. C., which is now employing 30 operatives.

Hayden C. Hooper, sales

You can depend upon "Industrial" for CUT GEARS CUT RACKS CUT SPROCKETS



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"Second Time"

WAR DEPARTMENT
OFFICE OF THE UNDER SECRETARY
WASHINGTON, D. C.

4 December 1943

To the Men and Women
of Alfred Hofmann & Company
629-35 59th Street
West New York, New Jersey

I am pleased to inform you that you have won for the second time the Army-Navy Production Award for meritorious services on the production front.

You have continued to maintain the high standard that you set for yourselves and which won you distinction more than six months ago. You may well be proud of your achievement.

The White Star, which the renewal adds to your Army-Navy Production Award flag, is the symbol of appreciation from our Armed Forces for your continued and determined effort and patriotism.

Sincerely yours,

Robert P. Patterson
Under Secretary of War

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WEST NEW YORK, N. J.

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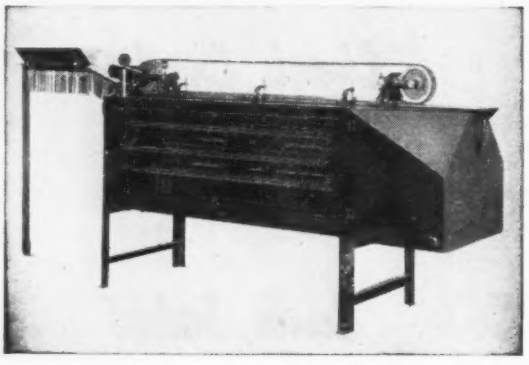

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LOOM BOBBIN STRIPPER
for
RAYON YARNS

The Terrell Machine Co., Inc.
CHARLOTTE, N. C.

James F. Notman, Needham, Mass. . . . . N. E. States
E. W. S. Jasper, Inc., Elizabeth, N. J., Penn., N. Y. and N. J.
W. J. Westaway Co., Ltd., Hamilton & Montreal . Canada
Geo. Thomas & Co., Manchester, Eng. . European Agent

manager of the Peerless Mattress Co., Lexington, N. C., for 15 years, has resigned to become associated with the Dixie Waste Mills, Charlotte, N. C.

H. D. Hammett has resigned from Standard Bleachery to become sales manager of the New York office of Utica Willowvale Bleaching Co., Chadwicks, N. Y. He has been calling on the New York trade for 22 years.

Davis Blackwelder, who recently withdrew as a partner of J. E. Sirrine & Co., Greenville, S. C., after an association of 21 years, has become chief engineer of Reynolds Metals Co., Richmond, Va.

D. E. Woodman, Atlanta, Ga., management engineer, has become assistant to Simon Schwob, president of Schwob Mfg. Co., Columbus, Ga.

William G. Marks, of Durham, N. C., director of safety and training at Erwin Cotton Mills, is teaching a course in industrial safety engineering at Duke University.

R. L. Holbrook, assistant treasurer-secretary of Wiscassett Mills Co., Albemarle, N. C., since 1937, has been promoted to treasurer-secretary of the company, to succeed **Hearne Swink** of Salisbury, who has resigned.

Harley J. Morris has been appointed chief plant chemist at the Meadville, Pa., acetate plant of American Viscose Corp. Mr. Morris had been assistant plant chemist under the chief plant chemist, **F. William Koster,** who was also director of acetate research. As was announced recently, Mr. Koster has been made assistant director of chemical research for the corporation and has been transferred to the company's chemical research laboratory at Marcus Hook, Pa. **William K. Mohney,** who for three years has been associated with the research group at the Meadville Plant, has been appointed assistant plant chemist.

Therman L. Ritchie has been made superintendent of the Marion (N. C.) Mfg. Co.

Edgar Israel has resigned as superintendent of Stonewall (Miss.) Cotton Mills, to accept a similar position with Aponaug Mfg. Co., unit No. 1, West Point, Miss.

E. L. Hill, personnel manager of American Viscose Corp., Nitro, W. Va., plant, has been transferred to the company's plant at Marcus Hook, Pa. **M. V. Ridneour,** assistant personnel manager at the Parkersburg plant, has succeeded Mr. Hill.

AUGUST W. KOPS, now vice-president and chairman of executive committee, Blossom Products Corp. and Rayon Corp. of America.

Preston Newell, superintendent of Aponaug Mfg. Co., which has plants at McComb, West Point and Kosciusko, all in Mississippi, has been promoted to vice president. **Mrs. Edwina Lewis** has been made secretary.

Fred Krenson has become editor of the *Bibb Recorder,* official publication of Bibb Mfg. Co., Macon, Ga. He will also be associated with the social service activity of these mills. He was for nine years U. S. probation officer at Macon.

Eugene R. McCracken, with the Winston-Salem, N. C., OPA office since July 8, 1942, and prior to that time, connected with Arista Mills, and P. H. Hanes Knitting Co., in Winston-Salem, has accepted the post of textile industrialist specialist with Smaller War Plants Corp., with headquarters in Charlotte.

J. L. Mitchell has become treasurer of the Southern Asbestos Co., Charlotte, N. C.

John D. Green, who has been superintendent of Springs Cotton Mills, Kershaw, S. C., has been promoted to manager.

Wm. R. Crabtree, Gastonia, N. C., an executive of Firestone Cotton Mills there, has been appointed general manager of the company's new plant at Bennettsville, S. C., and will make his home there in the future.

B. H. Bloch, head of the throwing department of Greensboro (N. C.) plant of Burlington Mills Corp., is now teaching fabric testing and analysis two nights a week to

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Franklin's

WATER REPELLENT

Here is an easy, economical and practical way of giving *extra protection, greater beauty and serviceability* to cotton, linen, natural silk, cellulose, acetate and wool.

Colacet makes textiles water repellent, stain and spot resistant, gives them a rich looking sheen, and helps them to stay *fresh looking and new.*

May we send literature that tells the complete story?

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THE BARRE WOOL COMBING CO., LTD.

Commission Combers and Dyers

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ATTENTION!

That's what your fabrics will get from the purchaser when you use

DRUMMOND SOAP

Here's why . . . If you have to meet Army Quartermaster Department specifications your fabrics will show a big improvement right down the line if you use

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It's a high-body product of low alkali content . . . No filler of any kind . . . A high binding quality that results in minimum flocking . . . Saves on steam and water because it rinses easily and completely . . . Better fulling and scouring . . . Leaves fabric perfectly clean with softest feel, better hand, brighter colors and whiter whites . . . Want to try it? Just write us today for free working samples and test Drummond Soap on your own goods.

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Standard Soap Co. of Camden

205 South 2nd St. Camden, N. J.

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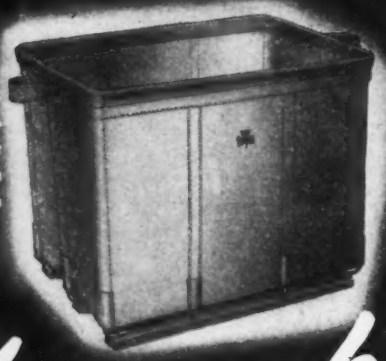
"Busy Baskets"



On the Home Front, Shamrock Canvas Baskets, Hampers & Trucks are busier than ever these days. Their rugged construction is a source of satisfaction to users everywhere.

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KEEP ON BUYING WAR BONDS

members of the class established recently at Woman's college, Greensboro.

H. A. Pickford has become manager of Highland Mills, Griffin, Ga., succeeding **H. V. Murdaugh,** who has accepted the superintendency of Industrial Cotton Mills, Rock Hill, S. C.

W. F. Trogdon, formerly with Leward Cotton Mills, Worthville, N. C., has become general superintendent of carding and spinning at Consolidated Textile Corp., Lynchburg, Va.

W. H. Glenn has become superintendent of Jennings Cotton Mills, Lumberton, N. C.

M. T. Massingill has become superintendent of Birmingham (Ala.) Cotton Mills.

Olivia J. Auclair, overseer for 10 years at the old Amoskeag Mills, Manchester, N. H., is now the owner of the largest poultry farm in Manchester.

Paul D. Ostrander, formerly with the Goodyear Tire & Rubber Co., Akron, Ohio, has become superintendent of Goodyear Clearwater Mill, No. 1, Cedartown, Ga.

D. H. Morgan, formerly of Carrollton, Ga., has become superintendent of Alabama Cotton Mills, Jasper, Ala.

Herman Patterson has become a member of the office personnel of Gossett Mills, Williamston, S. C.

Textile Men in Armed Services

Charles Hendrixson, Jr., manufacturing superintendent of the Nitro (W. Va.) plant of American Viscose Corp., has been granted military leave commencing Dec. 15. **John E. Spalding,** assistant to the head of the company's Fibro pilot plant at Nitro, has been appointed acting manufacturing superintendent of the plant and will assume Mr. Hendrixson's duties for the period of his military leave.

John H. Sinkinson formerly in credit department of Crompton-Richmond Co., New York, has joined the Army at North Camp Hood, Texas.

Jack Goldstone, vice president of S. T. Palay Textile Corp., New York, reported for duty at Camp Dix on Jan. 3.

Francis H. Murphy, general superintendent of Belding-Heminway-Corticelli, Inc., Putnam, Conn., has resigned to enlist in the Navy. He is in training at Sampson, N. Y. He is succeeded at the Putnam plant by **David Maxon,** formerly in charge of Willimantic (Conn.) Mills.

ROBERT J. DILLON, former New York work-clothing manufacturer and at present officer-in-charge of the Contracting Branch, Procurement Division, Philadelphia QM Depot, who has been promoted from major rank of lieutenant colonel. Colonel Dillon in the last war enlisted in New York's famous "Fighting 69th" and was one of the youngest men in the Army. He saw service in both France and Germany. He later organized his own businesses, the Blue Ridge Overalls Co. and the Blue Jay Mfg. Co., two of the largest manufacturers of work clothing in America.

AMONG THOSE recently reported as missing in action are Capt. John W. Lasell, a director of Whitin Machine Works who was serving with the Army Air Force in the Far East, and Lt. (j.g.) William R. Cameron, Midwest representative of Bates Fabrics, Inc., who was on the carrier Liscomb Bay which was sunk in the Pacific theater.

John C. Wilmerding, lieutenant, U.S.N.R., of New York office of American Viscose Corp., has been awarded the Legion of Merit for exceptionally meritorious conduct in performance of outstanding service as gunnery officer of a destroyer operating in the South Pacific area.

John G. Boyle, of the Atlanta, Ga., office of Eagle &

12599
SUCCESSFULLY SERVING THE WAR EFFORT . . . —
ARKANSAS PRODUCTS
Designed to meet rigid government specifications are rendering a distinct service toward the ultimate victory . . . .—

MILDEW INHIBITORS

for various types of cotton cloth and yarn non-toxic—non-irritating

FUNGICIDE M: a single product combining a mildew inhibitor and water repellent for producing a mildewproof water repellent finish on insect netting, tapes, sheeting, webbing, thread, etc., in one operation.

FUNGICIDE PG: for mildewproofing duck, plied-yarns, etc., by the two bath method.

FUNGICIDE GM: used in conjunction with water repellents in a one bath treatment to mildewproof cottons and impart a water repellent finish.

FUNGICIDE A: a mildewproofer for cloth coating processes . . . — used directly in the vinyl resin solution.

AQUAROL*: produces a water repellent finish on uniform cloth, overcoatings and other military fabrics . . . — may be used in a single bath treatment with Fungicide GM to impart water repellency and mildew resistance to cottons . . . — also used in single bath with Arko Fire Retardant to produce water repellency and fire resistance.

ARKO FIRE RETARDANT: for flameproofing uniform cloth, tentage, felts, etc.

CULOFIX L*: used as an after treatment in last rinse to prevent color bleeding in water of direct dyed cotton or rayon.

* Reg. U.S. Pat. Off.

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Single- and Double-End Types. Collapsible arms on reel, automatic yardage control and improved tension device. Reduced doffing cycle with Twin-Unit System.

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ACTUAL SIZE
EMPIRE
textile
mill crayons
THE PERFECT MARKER FOR ALL TEXTILE MILLS
Especially made for marking the roving in wool, cotton, silk, rayon, and all textile mills.
Supplied in 18 clear, distinguishable colors.
Write to Dept. T-1 for a FREE chart showing these colors.
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NEWS ABOUT MEN

CAPT. HOWARD S. SCHNEIDEWIND, executive officer of the Planning & Control Branch, Procurement Division, Philadelphia QM Depot, who originated unusual fire prevention posters which are being distributed to thousands of manufacturing plants throughout the country by the Depot. He was vice president of Bridgewater (Vt.) Woolen Co. and of North Billerica (Mass.) Co.

ERNEST W. HEWETT, of Upper Darby, Pa., a first lieutenant, who has been Officer-In-Charge of Operations, Planning & Control Branch, Philadelphia QM Depot, since he was commissioned in 1942. Prior to that time, Lt. Hewett had been associated with the Goodall Worsted Co., Sanford, Me., for 17 years. For seven of these years, he was production manager of the company.

Phenix Mills, now on leave serving in the armed forces, has just been promoted to Technician Third Grade.

George E. Townsend, textile chemist and colorist for Rock Hill (S. C.) Printing & Finishing Co., before entering the service, has been graduated from the Chemical Warfare School, Edgewood Arsenal, Md. He has the rank of captain.

Clarence H. Barrier, who until recently was connected with the shipping department of Kerr Bleaching & Finishing Works, Concord, N. C., is now training at the Great Lakes Naval Training Station. He reports that there are five other former Kerr Bleachery & Finishing Co. employes in the same company he is in.

S. Reed Anthony, who was associated with the Charlotte sales office of American Viscose Corp. before joining the United States Navy as lieutenant (j.g.) in July, 1942, has been promoted to lieutenant (s.g.).

Obituary

Louis F. Kraemer, 89, head of Kraemer Woolen Mills, Inc., Stony Creek Mills, Pa., until his retirement in 1937, died Dec. 19. He joined in 1873 the firm founded by his father in 1864. He was active in banking circles in Reading and vicinity.

Milton J. Heim, 49, manager of the Central Division of National Starch Products, Inc., at Philadelphia, died on Dec. 24. He had been with the firm for 25 years.

Dr. John Sutliff Fonda, 43, assistant director of sales, Grasselli Chemicals Dept. of E. I. du Pont de Nemours & Co., Wilmington, Del., died Dec. 22. He had been with du Pont for 18 years, being importantly connected with the company's early work on rayon.

Edgar B. Kerst, sales department of Proctor & Schwartz, Inc., died in Chestnut Hill, Pa., on Dec. 2. He had been with the firm for about 35 years, most of which in sales division.

Percy F. Phillips, 91, cotton goods broker, New York, died Jan. 4 at Plainfield, N. J. He entered the cotton goods trade as a young man and had been active in business until he became ill Dec. 28.

Ernest H. Epp, of Reading, Pa., Master Sergeant in the Army, died in Dinjan, India, Nov. 27. Mr. Epp had been awarded the Distinguished Flying Cross and the Air Medal

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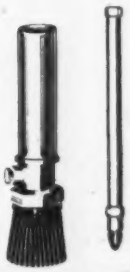
CLEAR—EASILY READ—PERMANENT STENCILED ADDRESSED SHIPMENTS move thru the Shipping Room faster and are speeded all along in transit.

DIAGRAPH-BRADLEY FOUNTAIN STENCIL BRUSH —features: button type ink control—ink capacity for 1,200 to 1,500 addresses—positively will not flood, clog, smear, or leak—replaceable bristle tip—non-breakable leak-proof end.



DIAGRAPH-BRADLEY FOUNTAIN MARKING PENCIL —a leak-proof non-clogging marking pencil for use wherever a marking pencil is required.

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FOR BEST RESULTS USE:
- D-B FOUNTAIN STENCIL BRUSHES
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NO. 60 DIAGRAPH BRADLEY BUILDING
ST. LOUIS, 8, MISSOURI
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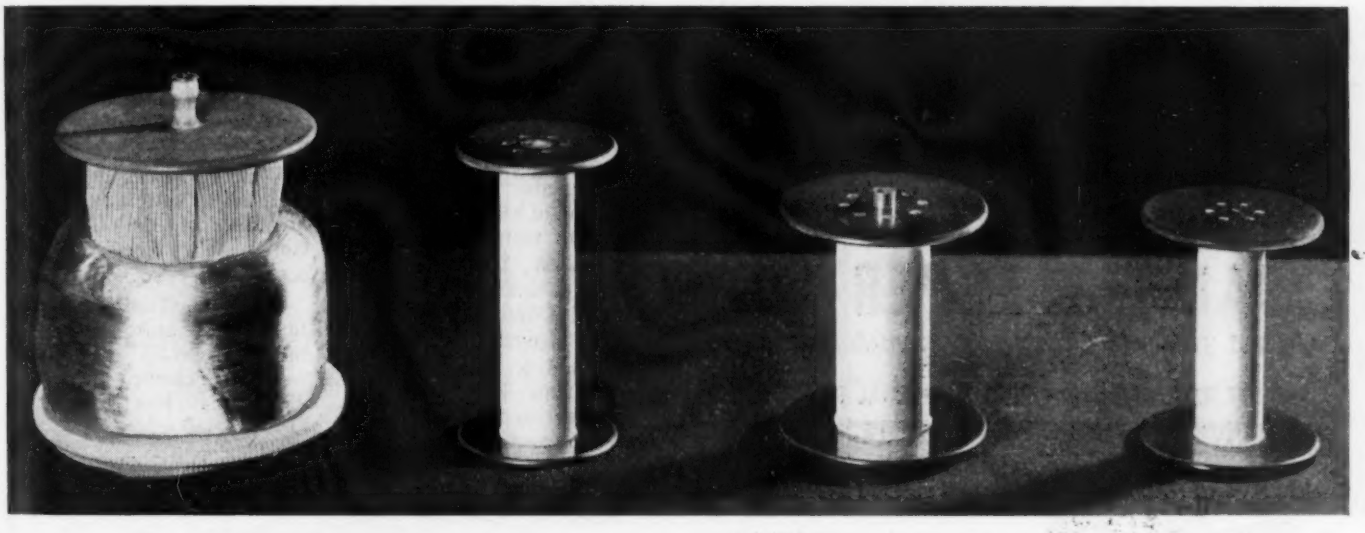

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There'll be no rejects on this cloth since we switched to—

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Specializing in

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COST SYSTEMS WORK LOAD STUDIES
PAY ROLL CONTROLS
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"YOU CAN COUNT ON WAK COUNTERS"

They are

RUGGED

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We build single, double and triple pick counters; yardage, rotary, ratchet and special counters.

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WAK INDUSTRIES CHARLOTTE, N. C.

for flights over China and India. He was prior to enlisting in the knitting department of the Berkshire Knitting Mills.

Robert D. Howerton, 42, western sales manager of Calco Chemical Division, American Cyanamid Co., with headquarters in Chicago, died last month. His early experience was in the dyeing and finishing industry of the South and he was Calco's sales representative in that territory some years ago. He was a former president of Carolina Yarn Association.

D. Hamp Morris, Jr., 58, president of Geneva (Ala.) Cotton Mills, a member of the partnership of Montgomery (Ala.) Cotton Mills, and Bama Cotton Mills, Enterprise, Ala., and president of the Alabama Cotton Manufacturers' Association, died recently.

Gurley O. Coble, 72, Greensboro, N. C., cotton broker and a member of the board of directors of Roxboro (N. C.) Cotton Mills, died Dec. 2. In 1897 he became the first general manager of Proximity Mfg. Co., and later secretary-treasurer of Roxboro Cotton Mills, Locke Cotton Mills, and Pomona Mills.

Thomas P. Moore, who founded the Lockmore Cotton Mills and the Neely Cotton Mills, York, S. C., and was president and treasurer of the company for many years, died recently. He had made his home in Morganton, N. C., in recent years.

Harry W. Lentz, 60, president of Charles Lentz & Sons Surgical Goods Co., Melrose Park, Pa., died Dec. 11.

Cleland K. Smith, 83, for more than half a century prominent in the cotton trade and a former president of the Memphis Cotton Exchange, died Nov. 24.

Frank A. Ross, 60, senior vice president of Stewart-Warner Corp., died recently in Chicago.

William H. Stanton, 83, former director and works manager of Philadelphia (Pa.) Quartz Co., died Dec. 11. He had been associated with the quartz company since 1889. He retired from active service in 1919.

George Nelson Brooks, 61, vice-president and treasurer of James E. Brooks Cotton Co., died recently in Montreal.

Thomas A. Yates, 43, executive vice-president of Yates Bleachery Co., Lafayette, Ga., died recently.

Garrett D. Bowne, manager, General Mill Electrification Section, Industrial Department, Westinghouse Electric & Mfg. Co., East Pittsburgh, died in Sewickley, Pa., recently. In 1912 he was placed in charge of the textile industry electrification. In 1931 he was appointed manager of the general mill electrification section.

Ernest F. Bohannon, Jr., 38, secretary-treasurer of Mooresville (N. C.) Cotton Mills, died Nov. 28.

Norman Harcourt Robinson, 50, director and secretary-treasurer of W. Robinson & Son, Ltd., Toronto, Ontario, died recently.

Robert E. Douglass, 47, textile mill representative, formerly connected with the Pacific Mills, and at one time with Marshall Field & Co., died in Atlanta, Ga., recently.

Homer Duncan Eddins, New Orleans representative for the Dundee Mills and Woodward Baldwin & Co., died last month.

Frederick G. Hamilton, 57, an executive of the Spool Cotton Co., New York, died recently at Fort Lauderdale, Fla.

Harvey Glick, 47, private in the Army, formerly with Belding-Heminway-Corticelli, Inc., New York, was killed in a railway accident in this country.

Wm. R. Pharr, 59, Clarksdale, Miss., cotton factor and president of the Clarksdale Cotton Exchange, died recently.

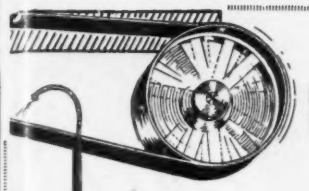
Curtis E. Trafton, 69, retired cotton broker and for a time engaged in promotional work for Pepperell Mfg. Co., died at Fall River, Mass., on Dec. 1.

Joseph Waterhouse, 86, one of the early woolen mill owners of Ontario, died recently in Ingersoll, Ont. He had been in the textile business for nearly half a century.

Leon Seigner, 65, manager of Culpepper (Va.) Textile Mills, died Dec. 10.

Thomas Mason Lillard, 73, for more than 50 years associated with Chatham Mfg. Co., Elkin, N. C., and for a long time vice president of the company, died Dec. 13.

Horton B. Weaver, 38, former cost manager for Warwick Mills, West Warwick, R. I., died at Providence, R. I., on Dec. 13.



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No LADDER to MOVE

Belts can be treated when they need it, while running. That's IMPORTANT!

For top efficiency, treat belts before, or not later, than when a shiny streak appears on pulley. Static and costly belt cleaning can be eliminated.

DU-GRIP BELT OIL is actually three products in one—it has the highest degree of preserving, pulling and cleaning qualities.

The LONGSHOT BELT OILER is collapsible for easy handling. Special lengths available. Standard—8 feet.

BEARING OILERS also available from 1 to 10 feet long.

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Anywhere in the South

DC DANIEL CONSTRUCTION CO., INC.
Greenville, S. C. Birmingham, Ala.

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Buy War Bonds and

NEW BEDFORD, MASS. ALLEN COMPANY.

CONSERVE YOUR BEAMS! Keep them UNDER COVER

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Mr. L. E. Wooten, Fort Mill, So. Car.

THE NEW UNIVERSAL ROTAMETERS*

1 **New, compact, streamlined design allows for 25 piping combinations and retains rigid one-piece tube-frame construction.**

2 **Can be quickly installed in any pipe line at low cost. Provide accurate measurement of flow rates as low as 1/10 of maximum.**

3 **For measuring the flow of practically any liquid or gas, such as water, air, oil, alcohol, fuel oil, gasoline, acids, alkalis, etc.**

4 **Water capacities range from 19 c.c. per minute to 38 gpm and air capacities from 0.01 to 80 cfm; other liquids and gases in proportionate capacities.**

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SCHUTTE & KOERTING CO.

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1161 THOMPSON STREET, PHILADELPHIA 22, PA.

NOW!

RED-RAY
RADIANT BURNER

FOR
TENTERS
PALMERS
RESIN CURING OVENS
LOOP AND NET DRYERS
SLASHERS — SINGEING MACHINES

Speeds increased two to five times. Costs per yard lowered. Increased yardage, handled on existing machines obtained without major changes. Burners quickly installed on present machines.

Write for bulletin and complete information.

RED-RAY MANUFACTURING CO.
455 WEST 45th STREET, NEW YORK CITY

Southern Representative:
CAROLINA SPECIALTY COMPANY
1610 Hartford Rd., Charlotte, N. C.

"WORLD-STANDARD" TESTING EQUIPMENT

***Scott Testers accomplish tests by methods having recognition as Standard by governments, laboratory services and societies the world around. In fact, Scott testing methods often form the basis for the standards as written. 60 models for tensile, hysteresis, flexing, crepeage, twist, etc., from single hair to 1 ton.**

SCOTT TESTERS
*Registered Trademark

HENRY L. SCOTT CO. 95 Blackstone St. Providence, R. I.

Simplified DESIGN
Flexible POWER
Better EVAPORATION
More sensitive CONTROL

SOUTHWORTH HUMIDIFIER

Experienced textile men who know the merits of previous models of Southworth Humidifiers have found improvements in Model D that make it even more reliable and efficient.
Extreme sensitivity of control, and an "airplane propeller" type fan for greater evaporation, are two outstanding features.

NOTE
This advertisement is to remind you to include Southworth Humidifiers in your after-the-war plans. Frankly, we are 100% on war work and cannot make humidifiers at the present time.

THE SOUTHWORTH MACHINE CO.
PORTLAND MAINE

NEWS ABOUT Mills

Cotton Mill News

Aldora Mills, Barnesville, Ga,. operated by General Tire & Rubber Co., Akron, Ohio, have work under way on new one-story addition, designed to increase present capacity about 60%. It is scheduled for completion in May. A new one-story building recently has been completed, increasing output about 40%.

American Thread Co., Tallapoosa, Ga.—Work done on Tallapoosa mill was engineered by American Thread's own engineering staff and not by an outside firm as reported in these columns in November.

Anderson Weavers, Inc., located three miles south of Anderson, S. C., was gutted by fire Nov. 27. The loss was estimated at $50,000.

Aponaug Mfg. Co., Kosciusko, Miss., has established its third and fourth units in buildings at McComb, Miss., formerly used as cotton mills. About 3,000 spindles are in operation at present.

Bell Thread Co. Ltd., Hamilton, Ont., has completed erection of an addition. The new building, 80x50 ft., will be used for storage. Construction is of a type which will permit the erection of additional floors after the war.

Canada Cottons, Ltd., Cornwall, Ont., have work under way on new one-story mill addition, reported to cost over $125,000, for which general contract recently was awarded to A. W. Robertson, Ltd., Toronto, Ont.

Carolina Textiles, Inc., Spartanburg, S. C., has been formed with capital of $100,000 to finish and manufacture cotton products. John W. Erwin is president and treasurer; James O. Erwin, vice-president and secretary.

Firestone Cotton Mills, Gastonia, N. C.—The Federal Public Housing authority's project for 60 housing units for workers at the Firestone Cotton Mills got under way Nov. 12. J. N. Pease & Co., architects and engineers, Charlotte, N. C., prepared the plans, and McDevitt & Street Co., Charlotte, was awarded the contracts for all construction work. The mill is 100% on war work.

Jomac Products, Inc., Warsaw, Ind., has been incorporated to manufacture and process cotton, woolen and allied textile products by H. Howard Colehower Jr., C. Walker Jones and J. Hugh MacKay.

LaFrance Textiles Ltd., Woodstock, Ont., have completed the erection of a large warehouse at the east end of their plant.

Marshall (N. C.) **Spinning Mills** have been incorporated for $52,500. Incorporators are Sheldon M. Roper, W. Henkle Smith and N. M. Rudisill, of Lincolnton.

Norwood (N. C.) **Mfg. Co.** has been purchased by Collins & Aikman Corp., of New York, and will be known as the cotton yarn spinning division of the corporation. Charles E. Menefee, of New York, will be resident manager of the new unit. About 30,000 spindles are operated with around 600 operatives.

Pisgah Mills, Brevard, N. C., will soon complete an addition to the main plant in which carding and spinning machinery will be installed.

Providence Braid Co., Pawtucket, R. I., has taken out a permit for improvements in mill, for which general contract has been let to Smiley Construction Co., Pawtucket.

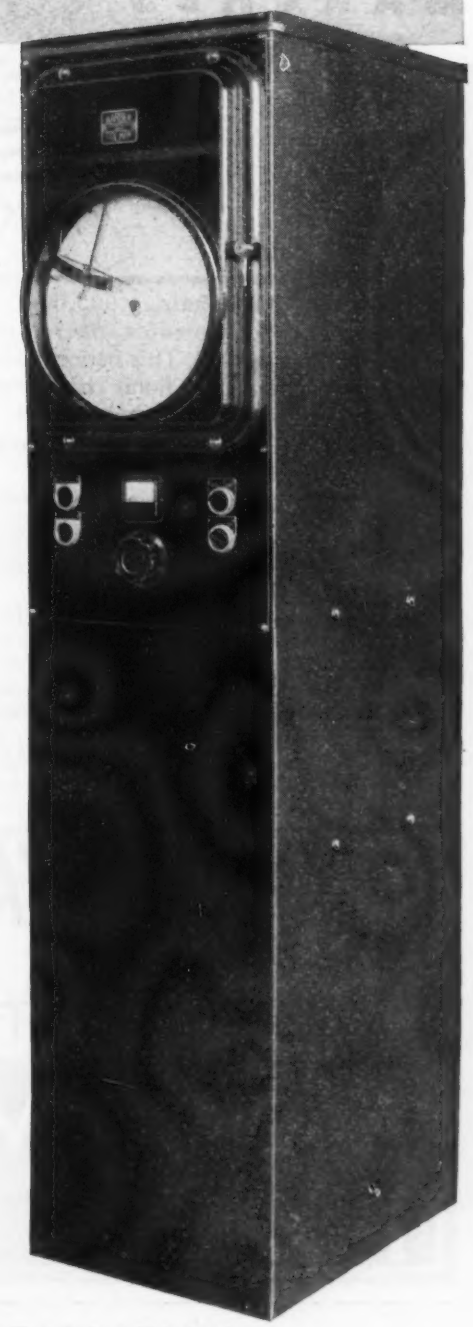
Quissett Mill, New Bedford, Mass., has been acquired by Jacob Ziskind, head of Crescent Co., Fall River, Mass., and associates, for a stated consideration of $105 per share of company stock, which totals 10,397 shares. New owner will continue operation of mill without change. Mr. Ziskind has become president and treasurer.

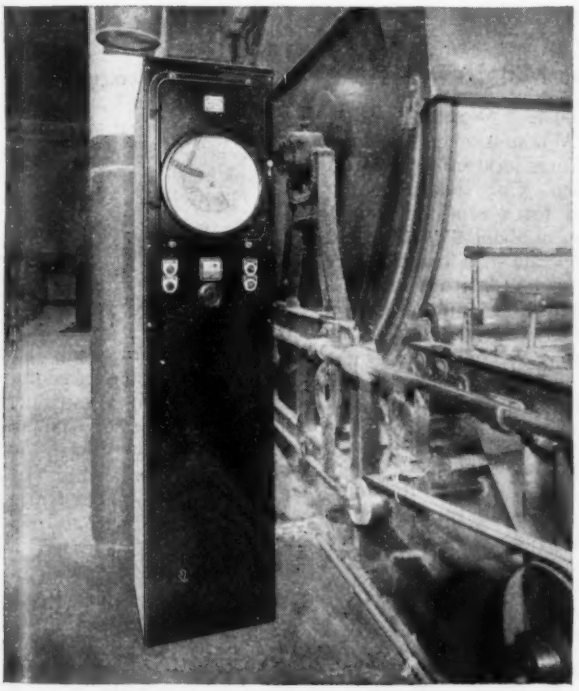
Samoset Cotton Mills, Talladega, Ala.—At a recent public auction for sale of this property no satisfactory bid was made and U. S. District Court has rejected all offers. Plant will be continued in operation under direction of E. D. Vaughan, trustee in bankruptcy. Offers will be con-

Compensates for the variables In Slashing . . .

BARBER-COLMAN MOISTURE CONTENT CONTROLLER

Some of the variables which affect the moisture content in warps are (1) Variable moisture content of material entering dryer, (2) Processing and storage faults, (3) Faulty equipment, (4) Improper machine adjustments, (5) Variations in driving motor speed, (6) Variable size level, (7) Variable size temperature, and (8) Variable cylinder temperature. An installation of Barber-Colman controls will compensate for these variables and permit maximum production of uniform and highest quality. The Barber-Colman Moisture Content Controller will allow the slasher to be operated at maximum temperature and therefore at the highest speed possible to produce the greatest yardage with a constant moisture content.





TYPICAL INSTALLATION...

The illustration at the left shows one of the Barber-Colman Moisture Content Controllers installed on a battery of nine slashers in a well-known New England cotton mill, where it is instrumental in maintaining uniform quality of high-grade sheeting and other products.

AUTOMATIC SPOOLERS • SUPER-SPEED WARPERS • WARP TYING MACHINES • TWISTER CREELS • MOISTURE CONTENT CONTROLS

BARBER-COLMAN COMPANY

ROCKFORD, ILLINOIS, U. S. A.

FRAMINGHAM, MASS., U. S. A. GREENVILLE, S. C., U. S. A. MANCHESTER, ENGLAND

COTTON MARCHES ON!

MORE than 25,000,000 page-dominating advertisements* of Cotton appeared in magazines and newspapers during 1943. This nation-wide campaign, using timely approaches, drove home the important role of Cotton in the war—and on the home front.

Following are the themes and the number of advertising messages devoted to each:

	Magazine	*Trade Papers*
Governor's Lady Series	2,652,593	211,003
Cotton Freshness Series	17,237,491	304,470
Cotton in the War Series	2,713,990	2,104,830
National Cotton Week	.....	205,605

*Figure does not include "Cotton Week" posters (more than 300,000), and other direct mail pieces, nor publicity features on Cotton, carried by more than 1,200 newspapers.

King of fibers in war and peace—Cotton marches on!

COTTON-TEXTILE INSTITUTE • New York
NATIONAL COTTON COUNCIL • Memphis, Tenn.

NOVELTY-YARNS
For
WEAVERS-KNITTERS
MONTGOMERY
WINDSOR LOCKS, CONN.
Designers and Spinners of Novelty Yarns

Engineers
J. E. SIRRINE & COMPANY
GREENVILLE SOUTH CAROLINA

sidered, it is stated, for a private sale of property.

Robert D. Sanders Corp., Durant, Miss., has opened its newly constructed Aponaug Chenille Co. plant. This is a $100,000 plant and will employ 350 workers on two shifts. In addition to making chenille products, the corporation will launder and pack the garments.

Scranton (Pa.) **Lace Co.** is curtailing operations at plant of Victory Parachutes, Inc., a subsidiary interest, owing to cancellation of a large war contract, and about 300 employes have been released.

Spindale (N. C.) **Mills, Inc.,** have completed extensive improvements to provide additional floor space for drawing-in room. Other improvements are being completed.

United States Rubber Co. has announced the conversion of mills at New Bedford, Mass., and Shelbyville, Tenn., from duck to automobile tire cord.

John D. Young Fabrics Co., 146 Lincoln St., Boston, Mass., has been incorporated with capital of 1000 shares of stock, no par value, to operate a mill in this vicinity for manufacture of cotton and woolen fabrics. Dexter Young is president; and Robert T. Young, treasurer.

Wool Mill News

Airedale Worsted Mills, Inc., Woonsocket, R. I., have taken over local mill of Lippitt Woolen Co., recently purchased for a reported consideration of about $500,000, and will operate as a branch plant in future. Company also has acquired local mill of Crown Piece Dye Works, and is remodeling and improving for a new dyeing division works. Ralph Hudson will be manager at last noted plant.

American Woolen Co., New York, N. Y., has sold its former four-story administration building at Andover, Mass., originally costing about $2,300,000, to Andover-Shawsheen Realty Co., which will operate it as an office building.

Amoskeag Lawrence Mills, Inc., Manchester, N. H., is making repairs to the mill at Dow and Canal streets, recently damaged by fire. Davison Construction Co., Manchester, is under contract to do the work for about $7,500.

Bernon Wool Co., Inc., Woonsocket, R. I., has been organized to operate a local wool scouring and processing mill. It is capitalized at 100 shares of stock and headed by Frederick D. Hogan and Joseph A. Guerin, Maple St., Smithfield, R. I.

Barre Wool Combing Co. has completed a large new addition to its mixture plant in South Barre, Mass. The building will house increased manufacturing area as well as a large storage space, offices and dyehouse laboratories. The addition was opened for inspection with a party honoring production veterans of the company. Nearly 60 "oldtimers" whose span of service ranges from 25 to 39 years were presented with service pins and framed certificates by Levon Yacubian, superintendent of the South Barre plant.

Dale Worsted Mills, Inc., Woonsocket, R. I., recently organized with capital of $200,000, plan operation of local mill. New company is headed by Joseph H. Axelrod and John R. Higgins, 86 Woodbine Rd., Woonsocket.

Elmvale Worsted Co., Pittsfield, Mass., has work underway making general repairs to its plant on Elmvale Place. A. L. Phelps Co., Springfield, Mass., has the general contract and the estimated cost is $25,000.

Empire Woolen Mills, Woonsocket, R. I., have filed notice of organization to operate a local mill. New company is headed by Ilona Gottlieb, 1149 Park Ave., Woonsocket.

Gaunt Worsted Mills, Inc., West Warwick, R. I., has installed a complete finishing department.

Limerick Yarn Mills have work underway on an addition to the plant on West Bridge Street, Manchester, N. H., from plans by Norris W. Corey, Manchester architect, Leon Keyser, Manchester, has the general contract, and Leon H. Goulet, Manchester, has the plumbing contract.

Mead Textiles, Inc., recently installed 16 automatic broad looms and other machinery at Forestdale, R. I., for the manufacture of woolen and worsted fabrics. J. C. Meade is president.

Monogram Mills, Inc., Woonsocket, R. I., have been chartered with capital of 100 shares of stock, no par value, to operate a local woolen mill. Incorporators include Joseph Goodman and Ernest L. Shein,

CHEMICALS CORPORATION

. . . ONE OF THE WORLD'S GREAT PRODUCERS OF BASIC CHEMICALS

CAUSTIC SODA

CALCIUM CHLORIDE

SODA ASH

CHLORINE

DRY ICE

BICARBONATE OF SODA

CALCIUM CARBONATE

AROMATIC INTERMEDIATES

HYDROGEN

MICHIGAN ALKALI DIVISION • Wyandotte, Michigan

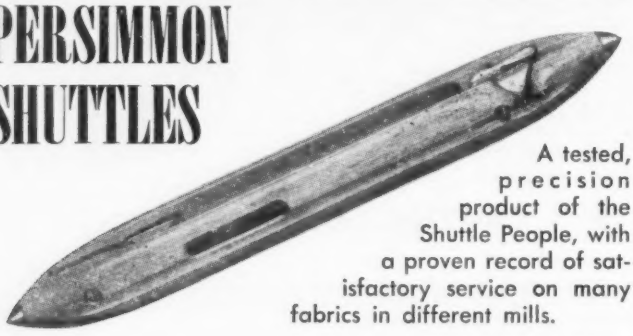
Amazingly Fast . . . Safe . . . Thorough

Setol **is an oil emulsifier—*it breaks down oils*—hence the speed with which it penetrates and removes stubborn coatings of grimy oil and grease. Though best known for its wonderful cleansing action on mill floors, *Setol* has proved equally effective for cleaning heavily soiled painted walls and ceilings. It's thoroughly safe . . . free from harmful properties that *clean away* the finish and discourage repeated cleaning. *Setol-cleaned surfaces save frequent redecorating! Setol* is both soluble and sudsless. Compounded in *Finnell's* own powder mill. Sold in barrels, half-barrels, quarter-barrels.**

For literature or consultation, phone or write nearest *Finnell* branch or Finnell System, Inc., 1901 East Street, Elkhart, Indiana.

FINNELL SYSTEM, INC.
Pioneers and Specialists in
FLOOR-MAINTENANCE EQUIPMENT AND SUPPLIES
BRANCHES IN ALL PRINCIPAL CITIES

PERSIMMON SHUTTLES



A tested, precision product of the Shuttle People, with a proven record of satisfactory service on many fabrics in different mills.

FACTORY — Millbury, Mass. SO. OFFICE —W. F. Daboll, E. V. Wilson, 810 Woodside Bldg., Greenville, S. C. NORTHERN REPRESENTATIVE — G. C. Burbank, 32 Beaconsfield Rd., Worcester 2, Mass.

WATSON-WILLIAMS

PENETRANTS • DETERGENTS
REPELLENTS • SOFTENERS
FINISHES

BURKART-SCHIER CHEMICAL CO.
CHATTANOOGA, TENNESSEE

Hospital Trust Building, Providence, R. I. Last noted is attorney and representative.

Premier Worsted Co., now occupies the former plant of the Carleigh Mills Co., Raleigh, N. C., and operates 4,800 spindles and 488 looms. Herbert Lawton is president of Premier, and J. M. Shockley acts as plant superintendent.

Putnam (Conn.) **Worsted Mills** have installed a dyeing department in conjunction with their finishing equipment.

Wanskuck Co., Providence, R. I., has awarded a contract to the Rowley Construction Co., Pawtucket, R. I., for alterations to storage building.

Ware (Mass.) **Woolen Co.**, sustained a fire loss at mill recently. An official estimate of loss has not been announced. The damage will be replaced.

M. J. Whittall Associates, Ltd., Worcester, Mass., plan early rebuilding of portion of No. 1 mill, recently damaged by fire, with loss reported about $10,000.

Wuskanut Mills, Inc., Farnumsville, Mass., has been acquired by Herbert Lawton & Co., and a new corporation, Wuskanut Worsted Corp., formed.

Rayon & Silk Mill News

American Enka Corp., Enka, N. C., has let general contract to Merchant Construction Co., Asheville, N. C., for addition to buildings used for laboratory.

American Viscose Corp., Front Royal, Va., has let contract for tripling production of its high-tenacity rayon to Rust Engineering Co., Pittsburgh.

Brighton Mills of New England Spun Silk Co., Allston, Boston, Mass., have work under way on alterations and improvements in mill, for which general contract recently was let to E. A. Parlee Co., Malden, Mass.

Canadian Celanese, Ltd., Drummondville, Que., has plans for two additions to mill, one and four-story, 157 x 295 ft., and 75 x 150 ft., respectively, and will award erection contract soon. Cost reported over $350,000, with machinery.

Drummondville Cotton Co., Drummondville, Que.; **Goodyear Cotton Co.**, Toronto, and **Firestone Cotton Mills Ltd.**, Woodstock, Ont., are converting to the handling of rayon. The Dominion Government will require about 18,000,000 lb. of high tenacity rayon tire cord yearly to be used in Canada with synthetic rubber.

Excelsior Mills, Union, S. C. representing the interests of Deering Milliken & Co., New York, is reported to be the operator of the new $2,000,000 rayon tire-cord twisting and weaving mill previously reported as about to be built near Clemson, S. C. Building will be windowless, one-story, with 100,000 sq. ft. floor space. J. E. Sirrine & Co. are the engineers; Daniel Construction Co., the builders; Huntington & Guerry have the electrical contract.

General Ribbon Mills, Bath, Pa., was destroyed Nov. 30 by fire of undetermined origin.

Myra Mills, Gastonia, N. C., reported last month, have 1,000 spindles on rayon yarn.

Neisler Mills, Inc., Kings Mountain, N. C., have work under way on extensions and improvements in former Queen Anne Mills, Ellenboro, N. C., to be operated as a branch plant for manufacture of rayon fabrics. Additional equipment will be installed.

North American Rayon Corp., Elizabethton, Tenn., through O. Allen, resident vice president, has announced plans for an expansion program which will provide 5,000,000 lb. annually of high-tenacity rayon for war purposes. Construction will start at once.

William Skinner & Sons, Holyoke, Mass., have work under way on improvements in mill, including installation of new elevator, for which contract was let to Otis Elevator Co., Springfield, Mass.

Waco Spinning Mills, Inc., Paterson, N. J., care of David Kwiat, 220 Van Houten St., Paterson, attorney and representative, has been incorporated with capital of 500 shares of stock, to operate a local rayon mill.

Knitting Mill News

A. Q.-Siler City Co., Inc., Siler City, N. C., newly-organized, has purchased for a reported consideration of $50,000 the one-story brick building and 300 x 600 ft. site formerly occupied by the Siler City Hosiery Co. Principals in the new company are J. Ed Anderson and A. T. Quantz, both of Timmonsville, S. C., and Philip Wick, of New York, who are currently engaged in tricot knitting at Timmonsville. It is

HAVE YOU CONSIDERED *This* KIND OF INSURANCE?

Today's war economy, with its increasing scarcities, has cast the hosiery industry's old equipment in a new role. And that means *Handle With Care,* since there won't be any new knitting machines available for the duration of the war. Indeed the wise manufacturer will regard systematic maintenance of existing equipment as the best possible form of insurance.

"Systematic maintenance" implies something more, of course, than the occasional replacement of worn parts. What may have been sufficient in days of peace and plenty is inadequate in wartime. Today, nothing less than a *complete* check-up on the "overall condition" of your S & W machines, as a preliminary step, may be considered proper maintenance. For the basis of your stake in the future is the operating condition of your knitting equipment.

Entirely aside from this, machines that operate efficiently save yarn—something to think about today . . . cut "downtime" when every minute counts . . . reduce the percentage of rejects and preserve customer goodwill. Doesn't it stand to reason, too, that the mill which maintains equipment at "peak" will be in a better position to meet the new demands on hosiery mills after Victory?

To help farsighted mill management keep present S & W machines in top-notch condition, and enter the Postwar with working "machine capital," Scott & Williams has made available the services of an experienced field organization. A survey of your mill now will enable you to make, systematically, any readjustments that may be needed. Mills quick to take advantage of this "machine conditioning" have traced to it worthwhile results. Scott & Williams urges you, too, to make use of this wartime service. There is no charge for the survey. • • •

This much is certain . . . the hosiery industry will not go back to where it left off. War is telescoping years of progress into months. Here at Scott & Williams, we are planning for Tomorrow, too . . . in terms of the knitting machines you will need to meet after-Victory hosiery demands. If you would like to "talk things over," drop us a line.

"THIS IS THE SCOTT & WILLIAMS MACHINE AGE"

ESTABLISHED 1865

SCOTT & WILLIAMS

INCORPORATED

EMPIRE STATE BUILDING NEW YORK 1, N. Y.

WHITMAN YARNS

WORSTED • COTTON • SPUN RAYON

ARLINGTON MILLS
LAWRENCE, MASS.

•

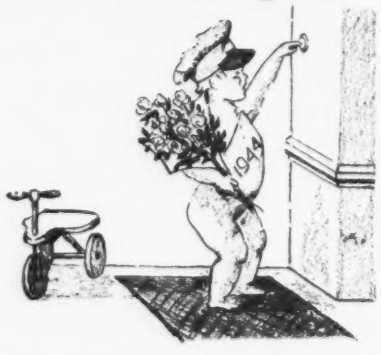
MONOMAC SPINNING CO.
LAWRENCE, MASS.

•

NONQUITT MILLS
NEW BEDFORD, MASS.

WILLIAM WHITMAN COMPANY, INC.
NEW YORK BOSTON PHILADELPHIA CHARLOTTE

A New Year



AND a new Sales and Technical service for the textile finishing industry. The opportunity to assist you with your bleaching, dyeing and finishing problems will be welcomed.

Representing:

Pabst Sales Company, Chicago, Ill.
"EXSIZE"—The standard desizer
The Hart Products Corp.*, New York, N. Y.
"KOPAN"—The new permanent finish.
Nuodex Products Co., Inc., Elizabeth, N. J.
Fungicides

C. H. PATRICK
P. O. Box 300 Telephone 1066
SALISBURY, N. C.

* *Selected accounts on* KOPAN *only.*

reported that they plan to open a similar knitting plant in the Siler City property.

Durham (N. C.) **Hosiery Mills**—Mill No. 1 of this company has been purchased by Dillon Supply Co., Raleigh, N. C., which will convert property for another line of manufacture.

Holeproof Hosiery Co. of Canada, London, Ont., is preparing to open a branch plant at a location yet to be selected in Ontario. The branch plant will give employment to nearly 100 women.

Kelray Knitting Mills., Reading, Pa., have just leased the group of buildings on Franklin St., West Reading, Pa., which were for many years owned and occupied by Stunzi Silk Co. Remodeling and improvements anticipated will cost approximately $30,000. Operations will be started with 300 or more employes.

E. E. Paquette & Sons Ltd., hosiery manufacturers, Woodstock, Ont., are erecting a brick building to replace the frame one destroyed by fire a few months ago. The structure will cost in excess of $15,000.

Reading Made Hosiery Mills, Reading, Pa.—An eight day walkout by 175 employees of Reading Made Hosiery Mills over terms of a new contract, ended abruptly Dec. 8, when the company announced it has discontinued the manufacture of hosiery. The sudden move, climaxing a dispute with Branch 10, American Federation of Hosiery Workers (CIO), left the workers temporarily without jobs. The management quit the hosiery business in both its Reading and Curwensville (Clearfield County) plants, and is concentrating on producing parachutes through a different company. The one in Reading is known as Aeronautical Supplies, Inc.

Salta Knitting Mills, Inc., New York, N. Y., care of George M. Burgh, 11 East 44th St., New York, attorney and representative, has recently been chartered with capital of 100 shares of stock, no par value, to operate a local mill.

Viola Knitting Mills, Inc., New York, N. Y., care of Mannheimer & Asche, 295 Madison Ave., New York, attorneys and representatives, have been chartered with capital of $20,000, to operate local mill for manufacture of outerwear.

Processing Plant News

Central Falls (R. I.) **Finishing Co.** has filed notice of change in company name to Yankee Finishing Co.

Cranston (R. I.) **Print Works** have work under way on one-story addition to boiler house at mill, for which general contract recently was awarded to Bowerman Bros., Cranston.

Millburn Mills, Inc., has bought the so-called "Upper" mill in Quidnick, R. I., for storage purposes. The concern uses the lower factory of the group, formerly a part of the Sprague cotton mill chain, for the finishing of fabrics.

Neversink Dyeing Co., Inc., Reading, Pa., has purchased the San Toy Theatre at Front & Lebanon Valley Railroad, Reading, Pa., which will be converted at once into a warehouse, building permit having just been issued for this purpose, alterations to cost $4,500 and the work will be done by L. H. Focht & Son, contractors, Reading, Pa.

Miscellaneous Mill News

Asbestos Fiber Spinning Co., North Wales, Pa., has been purchased by Greene, Tweed & Co., 4377 Bronx Blvd., New York, N. Y., which will operate as an affiliated interest in future.

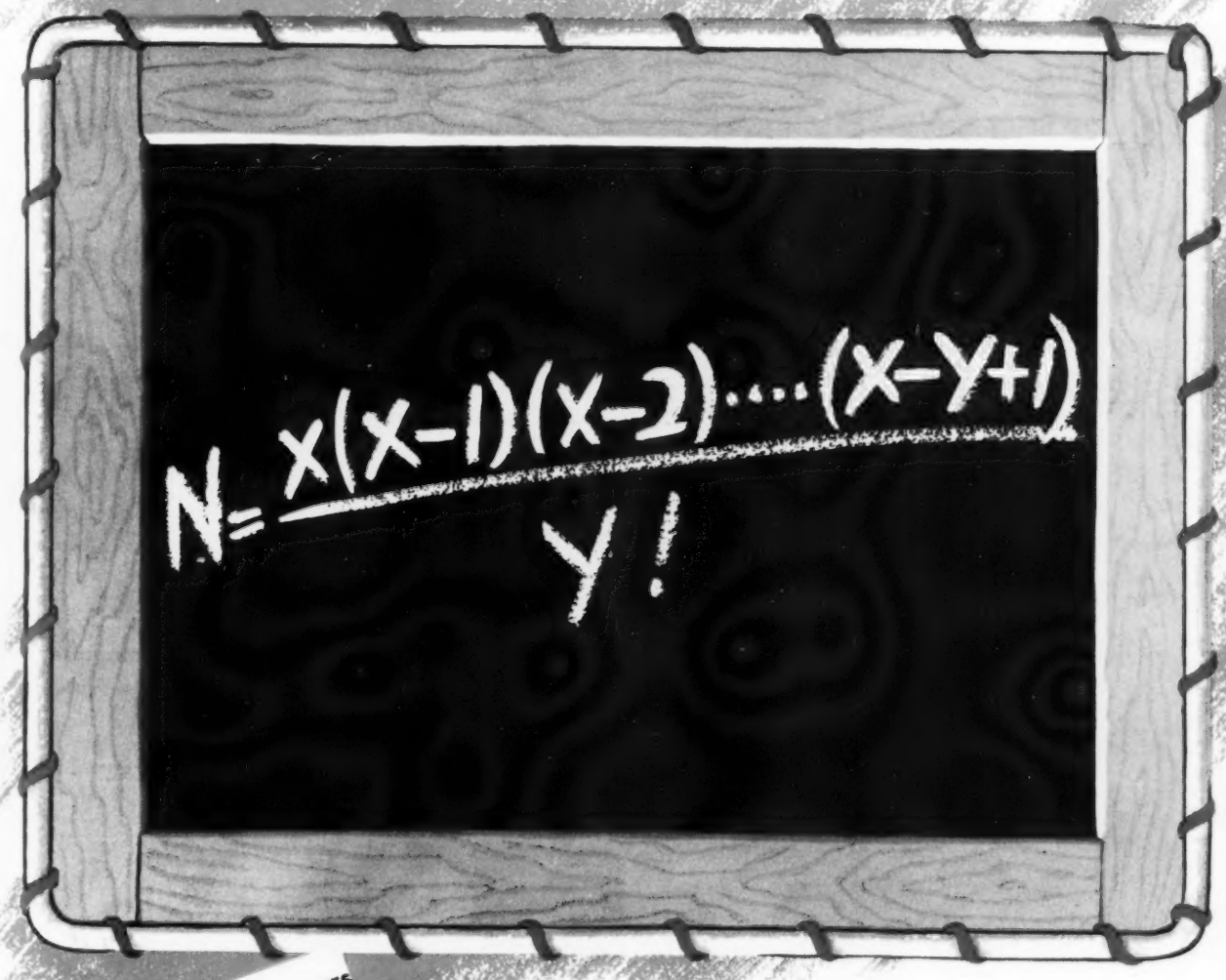
A California Fabric Original is the firm name under which Harry H. Schwartz has published an intention to conduct business at 752 South Los Angeles street, Los Angeles, Calif.

Federal Realty Co., Inc., Danbury, Conn., has been chartered under Connecticut laws to manufacture and deal in textile products. The company is incorporated with a capital of $50,000 composed of 500 $100 shares of stock.

Hesky Flax Products Ltd., Seaforth, Ont., Canada, suffered damage from a fire started by a spark from one of the machines. The plant has been 24 hours a day on war materials.

Ludlow (Mass.) **Mfg. & Sales Co.** will soon begin construction of new one-story addition to Building No. 8, reported to cost over $40,000 with equipment. McClintock & Craig, Inc., Springfield, Mass., are architects and engineers.

An Answer to your *MULTIPLE FIBRE* Problem...



With this formula you can calculate the number of possible combinations of X fibers (natural and synthetic) taken Y at a time, that could be used in cloth construction . . . the answer will amaze you.

We know, of course, that no one will actually use this formula. Common sense, experience and the ultimate use of the fabric will eliminate many possible combinations. The ones that emerge, however, will offer more complicated dyeing problems than we have known in the past.

Plan today for tomorrow's dyeing problems . . . tell us your story . . . send us a portion of your sample pieces.

DYESTUFFS • CHEMICALS • INTERMEDIATES

CIBA COMPANY INC.

Greenwich & Morton Sts. NEW YORK

BOSTON · CHICAGO · MONTREAL · CHARLOTTE
PROVIDENCE · SAN FRANCISCO · PHILADELPHIA

VAT DYES OF THE DOW CHEMICAL COMPANY

L. F. Dommerich & Company

Executive and General Offices

271 MADISON AVENUE
NEW YORK, N. Y.

Telephone: AShland 4-8650

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For Manufacturers and Merchants

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ESTABLISHED 1840

CEGLIN*

FINISH *for* TEXTILES

Cotton damasks are enhanced in eye value and hand appeal—by the addition of Ceglin finish. Applied without disturbing normal plant procedure, Ceglin insures longer service life to fabric—renders it lint-free, smooth, lustrous. The use of Ceglin produces a linen-like finish that is retained through repeated laundering and eliminates the need for starching.

SYLVANIA INDUSTRIAL CORPORATION

General Sales Office: 122 East 42nd Street, New York 17, N. Y.

Works and Principal Office: Fredericksburg, Virginia

*TRADE MARK REG. U.S. PAT. OFF.

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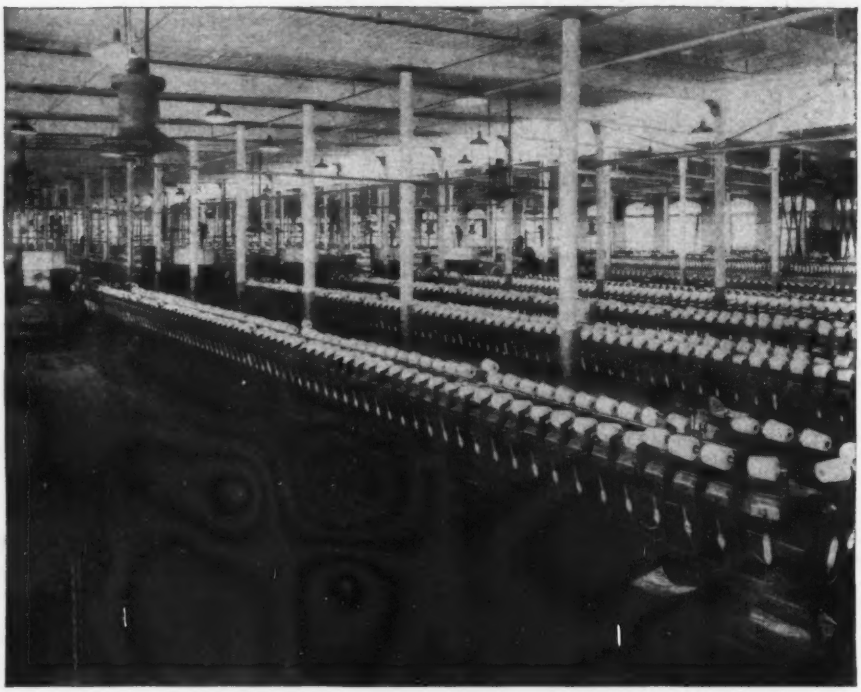
AQUA-SEC CORPORATION
1450 Broadway, N. Y. City 18, N. Y.

ARIDYE CORPORATION
Fair Lawn, N. J.

The AULT & WIBORG Co., of CANADA, Ltd.
Toronto and Montreal

AUTOMATIC TRAVELING SPINDLE WINDING



Twisting direct from large 5 to 6 pound cheeses up to 30's cotton yarn is rapidly replacing older systems of double end packages or beams.

Yarn supply in creel is much greater giving a long run between sets

The entire investment of doublers or warpers is saved

No doubling or warping labor

No waste made on doubling or warping

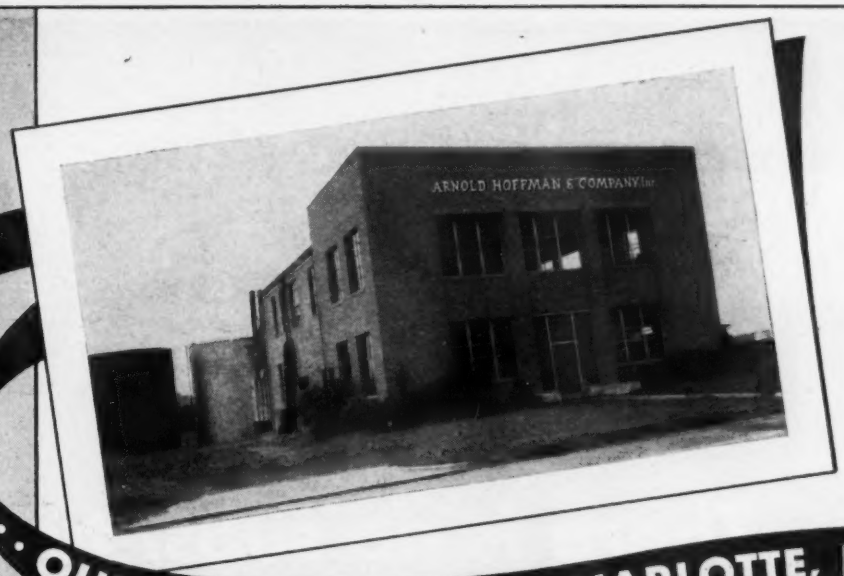
Even tension on the two or more ends

Less drop ply

ABBOTT MACHINE COMPANY

WILTON, N. H.

Southern Representative, L. S. LIGON, Greenville, S. C.



...OUR NEW PLANT AT CHARLOTTE, N. C.

TO BETTER SERVE THE SOUTHERN TEXTILE INDUSTRY

AHCO PRODUCTS

AHCOPEL
Water Repellent Emulsions

AHCOVEL
Substantive Softener

RESYNON
Finishing Compound

AHCOFIX-A
For Fixing Dyestuffs

AHCOWET-SM
Wetting Agent, Penetrant and Detergent

SYNTHAROL
Concentrated Cotton Warp Size

This building is located on North Tryon Avenue. We will occupy the offices before January 1, 1944 and will have the laboratory and plant in operation as soon thereafter as time and priorities will permit.

Supplementing our manufacturing facilities at Dighton, Mass., this plant at Charlotte will operate a research laboratory and manufacture and stock chemical specialties. Located in the heart of the textile south, it will greatly facilitate AHCO Service to our southern friends.

ARNOLD, HOFFMAN & CO., INC.

Established 1815 PROVIDENCE, R. I. Plant at Dighton, Mass.

NEW YORK • BOSTON • PHILADELPHIA • CHARLOTTE

PERKINS
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There is no substitute
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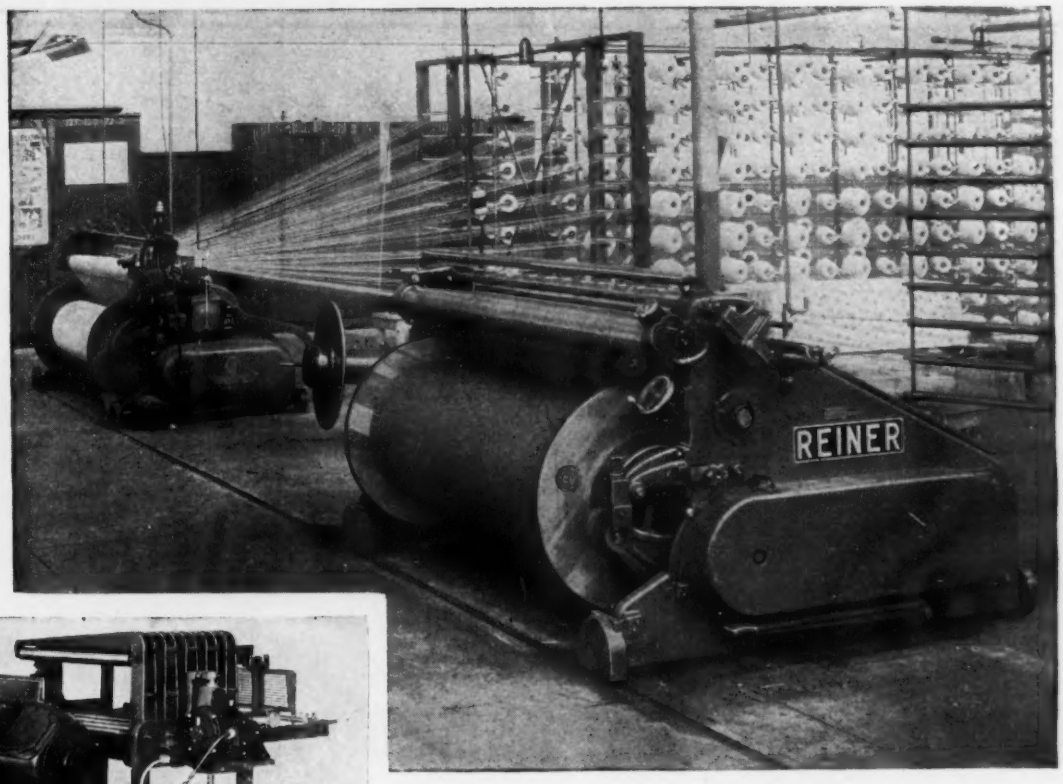
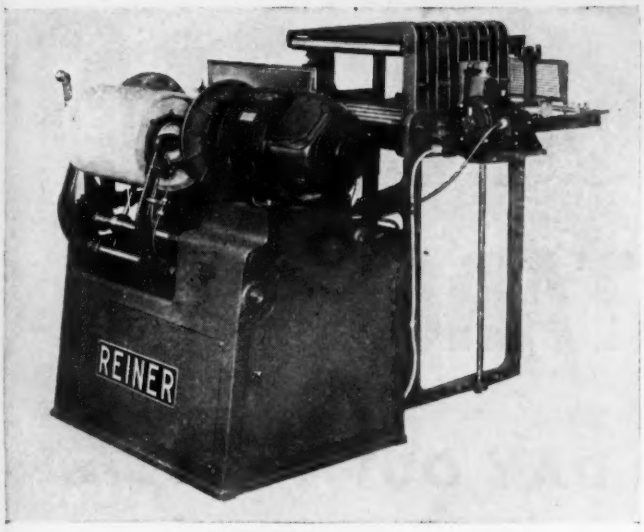
B. F. PERKINS & SON, Inc.
HOLYOKE, MASS., U.S.A.
LARGEST MANUFACTURERS OF CALENDER ROLLS IN THE WORLD

Two REINER Products for More Efficient Production at Lower Cost





REINER
Section
BEAMING MACHINE

Built for spools up to 18" in length with flange diameters up to 16". One or several spools may be coupled together with or without traverse motion. Special machines for spools up to 22" flange diameter and 22" long.

Stepless warping speed control from 50 to 800 yards per minute with extra slow starting speed independent of warping speeds.

The *Reiner Automatic Storage Device* (optional) permits taking off yarn from spool to facilitate repairing broken yarn ends without disturbing yarn tension.

No more efficient machine for the weaving and knitting trades has ever been developed. It may be obtained against priority rating.

Ten minutes from Times Square or Penn Station Via Lincoln Tunnel

Telephones—Union 7-0502—7-0503—7-0504—7-0505

REINER
HIGH SPEED
WARPER *and* CREEL

For beaming filament rayon, spun rayon, cotton, wool, worsted, linen etc.

It's an all-purpose, high speed, full width machine. Direct beam drive provides for adjustable and constant pressure of the yarn roller. Warping speed automatically adjusted with speed ranges of from 50 to 1000 yards per minute. Extra slow sensitive starting speeds independent of warping speeds.

Warpers and Creels may be obtained against priority rating. Send for descriptive catalog.

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REINER
INCORPORATED
WEEHAWKEN, NEW JERSEY

For This **NEW YEAR** *of 1944*

As For More Than 30 Years Past

STALEY'S

Complete line of UNMODIFIED *and* MODIFIED

TEXTILE STARCHES

FOR DAY IN AND DAY OUT . . .

★ ***QUALITY***

★ ***UNIFORMITY***

★ ***DEPENDABILITY***

TODAY as in WORLD WAR 1 ★★★ SERVING the TEXTILE INDUSTRY

A. E. STALEY MANUFACTURING COMPANY

DECATUR — **ILLINOIS**

Staley's CORN AND SOY BEAN PRODUCTS

ATLANTA, NEW YORK CITY, SPARTANBURG, CHICAGO, BOSTON

SINGER MACHINES ARE VITAL, TOO...

... for stitching a tent or shaping a helmet

and for sewing a thousand other things, necessary to clothe and equip men for all branches of the armed forces. Providing sewing machines of the highest quality in great quantities has been one of Singer's jobs for 90 years.

Singer sewing machines formerly available for making hundreds of different things for civilian use are now sewing parachutes, uniforms, tents, gun covers, shoes, powder bags, gas masks, and many, many other articles needed to bring speedy victory.

We are proud of our part in the drive to victory.

SINGER

SEWING MACHINE COMPANY
Manufacturing Trade Department
149 Broadway, New York, N. Y.
Branches in principal cities throughout the world

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All rights reserved for all countries.

Announcement

We have purchased from Mr. Jacob Ziskind, the goodwill, name, and all machine tools and parts, and business of the former T. C. Entwistle Co., of Lowell, Mass.

This plant will be immediately moved to our plant in Gastonia, N. C.

We expect to continue the Entwistle line of Warpers, Beamers, etc.

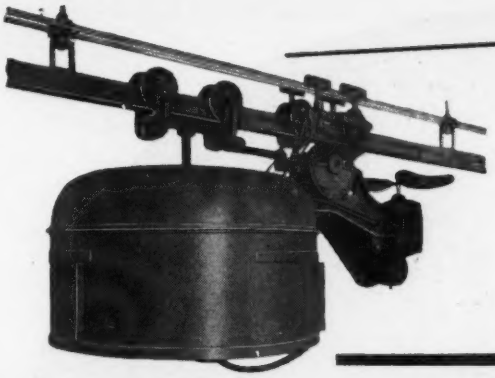
All replacement parts and supplies for Entwistle equipment will be promptly furnished by us from our plant in Gastonia, N. C.

We solicit your inquiries on either Cocker or Entwistle Warpers.

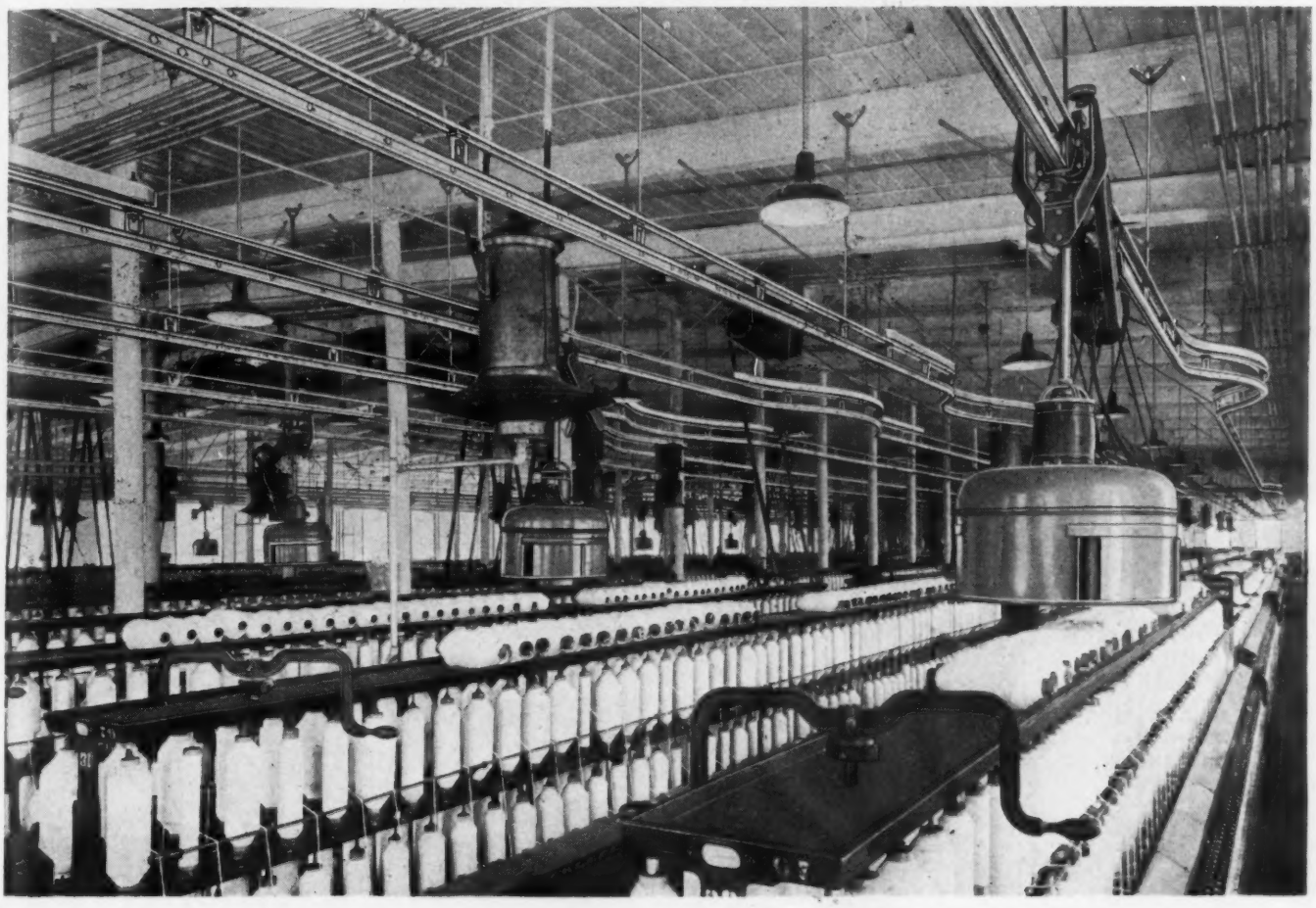
Cocker Machine & Foundry Company

Gastonia, North Carolina

Builders of Complete Warp Preparation Equipment



53% REDUCTION IN SPINNING ROOM ENDS DOWN



★ That's what actually happened in a yarn mill where American MonoRail Automatic Cleaning was installed. A 17-hour test run disclosed the following:

	No. of Ends Down per 1000 Sp. Hrs.	
Yarn No.	Hand Cleaning	Automatic Cleaning
8's	80.5	37.8
13's	22.6	10.6

This 53% reduction represents the difference between hand methods and Controlled Cyclonic Cleaning, where the lint is removed before it can accumulate. Cyclonic Cleaning can be adjusted to meet varying conditions in staple, yarn or humidity. It applies as successfully over winders, twisters and warpers as it does over long draft spinning.

Let an American MonoRail Engineer tell you the complete story of Controlled Cyclonic Cleaning with American MonoRail Overhead Cleaners. No obligations.

THE AMERICAN MONORAIL CO.

13108 Athens Avenue ★ Cleveland 7, Ohio

Pat'd & Pats. Pend.

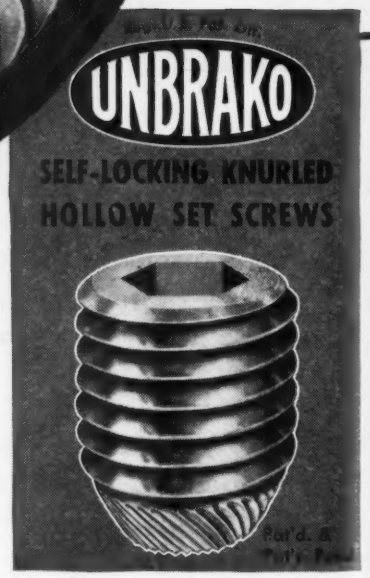
meet...

A SOLDIER ON THE HOME FRONT

Operating strictly on the offensive, the "Unbrako" Hollow-Set Screw with the knurled point has vibration licked at the start. Applied in the usual manner, the KNURLS dig in and the "Unbrako" hangs on with a grip that can't be shaken off no matter how hard the machinery vibrates, though in action day and night . . . There's a vast army of these "Unbrako" Self-Lockers on duty in war plants all over the country and in thousands of machines, tools and implements rolling off production lines—keeping maintenance costs and worries down by infallibly holding parts together under any and all conditions. And they're good for many "engagements" because they're easily removed with a wrench—can be re-used any number of times.

Sizes: No. 4 to 1½" diameter

Get the "Unbrako" catalog

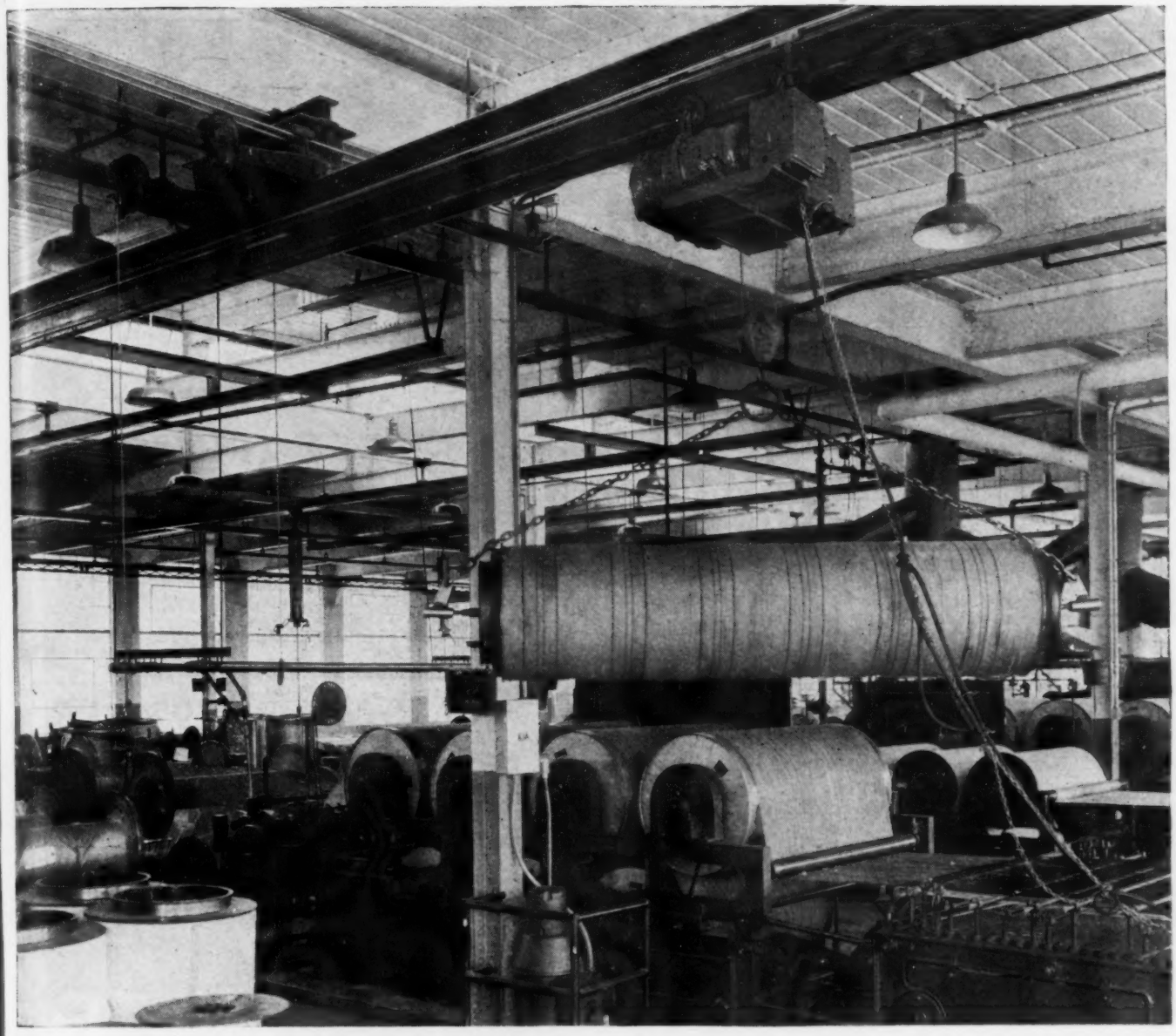


Knurling of Socket Screws originated with "Unbrako" years ago.

OVER 40 YEARS IN BUSINESS

STANDARD PRESSED STEEL CO.

JENKINTOWN, PENNA., BOX 571 BRANCHES: BOSTON · DETROIT · INDIANAPOLIS · CHICAGO · ST. LOUIS · SAN FRANCISCO



They're ready for the "Change-Over"

Just before war struck, this mill installed a nine-cylinder combination cotton and rayon slasher made of ARMCO Stainless Steel. Huge quantities of wartime textiles have rolled from its smooth cylinders. And just as important, this slasher will be ready for a fast change-over to civilian goods the day the war is won.

Besides being rugged enough to "stand the gaff" of constant production, stainless requires little care. In wet processing equipment, for example, there are only two things to remember: Expose the metal to air overnight at least once a week, and keep the surfaces free of lint and other deposits. A thorough rinse with hot water is all that is needed.

If you have stainless steel equipment, you'll be in the driver's seat in the rush for post-war business. If some of your equipment is worn, obsolete or inefficient, you are no doubt already planning an after-the-war replacement program.

Much of your post-war equipment can advantageously be made of ARMCO Stainless Steel. Dyeing and fulling machines and bleaching equipment are a few examples. Keep this rustless war-proved metal in mind when you plan your new machines. For information write to The American Rolling Mill Company, 631 Curtis Street, Middletown, Ohio.

EXPORT: THE ARMCO INTERNATIONAL CORPORATION

STAINLESS ARMCO STEEL

THE AMERICAN ROLLING MILL COMPANY

Remember

"U.S." *can give you* BOTH

THE SAME AS YOU'VE ALWAYS USED

A NEW AND IMPROVED TRAVELER DESIGN

Plus many other features

If for any reason you face a shortage of a given type of Ring Traveler, the U. S. Ring Traveler Company can supply another type in unvarying uniformity, and guarantee you the same (or better) results from its use.

On the other hand—are you having any trouble with your ring travelers? Are they breaking? Flying off the rings? Going "haywire"? Before you decide that the traveler's to blame, we suggest that you send for a "U.S." man. We don't mean just a salesman. We mean a man who's worked in the mill—run frames, been an overseer or a super. *A practical man.* Let him do a little looking around. Many times, in working with textile supers, we've been able to suggest some simple change in the traveler itself, or the method of operation, that has materially improved traveler life and performance.

As leading manufacturers of ring travelers for the textile industry, we want to help you meet the conditions of the months ahead—not simply to "sell" you travelers. U. S. Ring Traveler service is constructive and cooperative, because all of us must pull TOGETHER in this war effort if we want to hasten Victory.

PERFECT BALANCE Weighs same on both sides. Straight part of shank is in center of gravity. Distributes lubricant and wears evenly. Will not pivot twisting self and rayon.

THE NE-BOW Prevents yarn ends flying out, provides ample head-room for threading—prevents binding on ring. Note "bend inward" at top of horn.

HEAT CONTROL for better metal—dominates "U.S." production! Carburizing and tempering ovens are electrically controlled through pyrometers for better performance.

THE BEVEL EDGE Great pioneering "U.S." contributon to smooth spinning twisting. Eliminating angular edges gives uniformity of tension more even yarn, less "fly."

• *Sold under these trade names*

Bowen Round Point Travelers
Bowen Square Point Travelers
Bowen Improved Vertical Bronze
Bowen Patented Bevel Edge
Bowen Flat Oval and Round Wire Travelers
Bowen Patented Ne-Bow Vertical
Bowen Patented Vertical Offset

U.S. RING TRAVELER CO

AMOS M. BOWEN
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PROVIDENCE RHODE ISLAND

Style 27

LANE BASKET TRUCKS

Smooth - Light - Durable

Designed for
All Textile, Garment, and
Many Other Industrial Plants

W. T. Lane & Bros., Inc.

Mfrs.

Poughkeepsie, N. Y.

DAVIS AND FURBER

For the duration, our shops are principally engaged on war work.

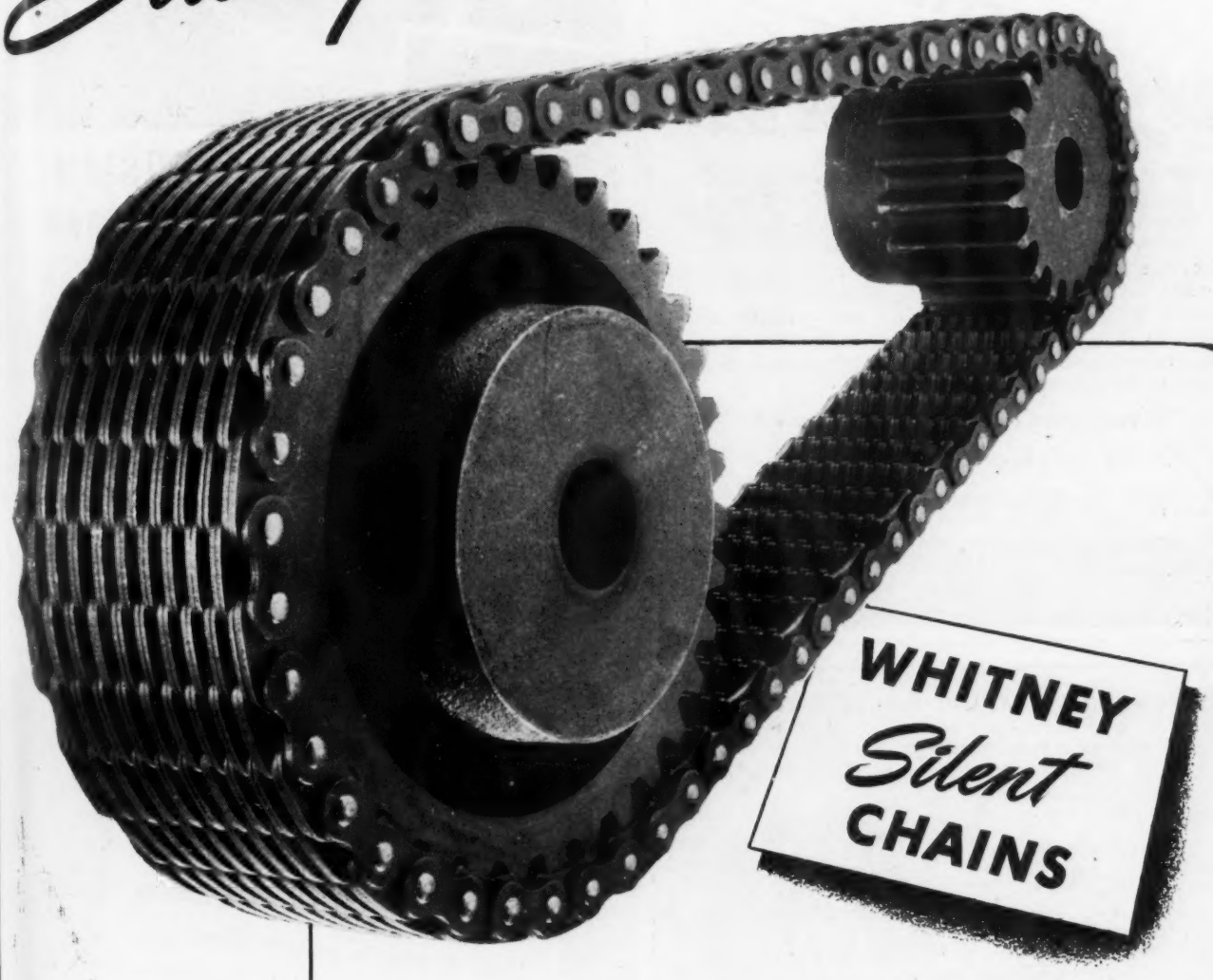
We are doing our utmost, by extra effort and careful planning, to deliver essential supplies for repairs and maintenance.

MACHINE PARTS FOR REPAIRS AND MAINTENANCE
CARD CLOTHING
NAPPER CLOTHING
GARNETT WIRE
LEATHER RUBB APRONS
LEATHER CONDENSER TAPES

DAVIS & FURBER
NORTH ANDOVER, MASS.

THE ACCEPTED STANDARD

Silent partners OF PRODUCTION



Whitney Silent Chains team up with power to keep machines operating at top capacity. They stay quietly on the job—day after day, night after night—putting full power to work at constant speeds that mean uniform production . . . *steady* production. And you won't hear any complaints from your maintenance men about these Silent Chains.

Whitney's double-bearing design and alloy-armored steels give extra wear, extra strength . . . as they have done for years on more than 20 leading makes of textile machines . . . *as they will do for you*, on all the machines in your mill.

THE WHITNEY CHAIN & MFG. CO., HARTFORD 2, CONN.

•MORE WEAR
•LESS STRETCH
•BETTER FIT

with Laurel Rayon Oils

PROPER FINISHING is a rayon requisite in spite of the need for speed in wartime production. Laurel Rayon Oils actually save production time. Laboratory and mill tested, they offset rayon weaknesses by improving lubrication, effecting gain in resiliency with resultant longer wear and better fit.

Laurel Rayon Oils and Finishes are available for immediate delivery. Our Laboratory stands ready to cooperate with you on special purpose compounds. Send for trial order today.

Throw your scrap into the fight!

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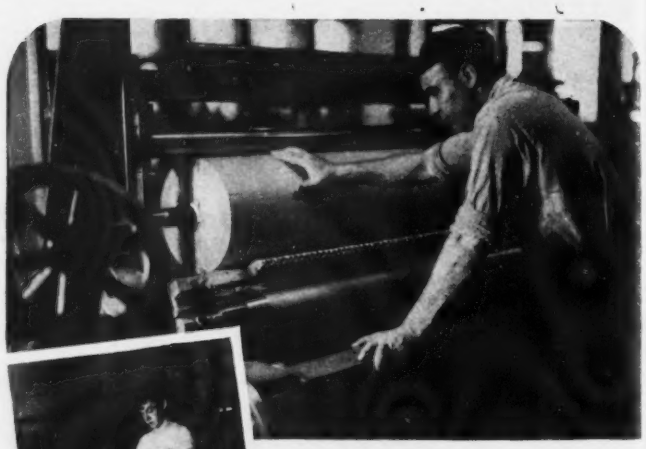
Laurel SOAP MANUFACTURING CO., INC.

WM. H. BERTOLET'S SONS ESTABLISHED 1909
TIOGA, THOMPSON & ALMOND STS., PHILADELPHIA, PA.
WAREHOUSES: PATERSON, N. J., CHATTANOOGA, TENN., CHARLOTTE, N. C.



KARAGHEUSIAN
MAKES PAPER YARN

Shortage of jute made it imperative to find a suitable substitute for rug and carpet backing. A. & M. Karagheusian, Inc., makers of Gulistan rugs and carpets, converted some spinning machines to the twisting of paper. Then they bought a CAMACHINE 9-5 for slitting wide webs of paper into narrow width rolls, which rolls are placed on the twisting machines, where they are converted into paper yarn. Everything is under control for the duration at the Karagheusian plant.

Write for interesting details.

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MIDWEST OFFICE: Harris Trust Building, 111 West Monroe Street, Chicago 3

Lengthen the life of your present belts with

Ensign 371 BELT PRESERVER

CLEANS PROTECTS PRESERVES *All Kinds of* BELTS

• You can add years to the life of your present belts—get more power—increase production by treating them with Ensign 371 Belt Preserver.

It cleans and preserves leather, canvas and porous belts, also establishes clean, resilient surface to rubber, composition and all non porous belts, preventing picking, oxidizing or cracking. Resists acid and alkali fumes.

Write for full particulars and for information on our 30 day test. It's a guarantee with no strings attached.

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Other Ensign Products available for maintenance and production problems.

ENSIGN PRODUCTS COMPANY
3530 EAST 76th STREET • CLEVELAND, OHIO

TRAVELING FACTS!

The new American Grumman Hellcat travels enemy filled air-lanes at a speed said to be a new high in fighter plane history.

Similarly Dary Ring Travelers, with a history of over 4 decades of superiority, permit higher spindle speed, plus longer wear.

See a Dary Representative NOW!

PROCESSED
SYMBOL OF SUPERIORITY

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TAUNTON, MASSACHUSETTS
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How to determine more accurately the Corrosion-Resistant materials best suited to your operations

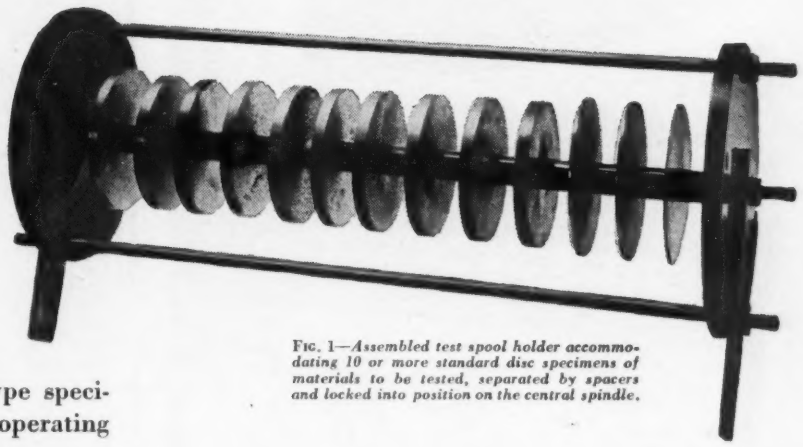

FIG. 1—*Assembled test spool holder accommodating 10 or more standard disc specimens of materials to be tested, separated by spacers and locked into position on the central spindle.*

The answer to a new or unusual corrosion problem . . . .where previous service information is not available . . . may be predicted with considerable accuracy in your plant by a "SPOOL TEST."

The method, developed by INCO's Technical Service, conforms closely to the A.S.T.M. Recommended Practice for Conducting Plant Corrosion Tests (A.S.T.M. Designation A-224-411). It features spool-type specimen holders which permit tests to be made in operating equipment under actual conditions of service.

Of simple construction and readily obtainable, these spool-type holders are adaptable to a wide variety of plant equipment. Exposure of the different metal specimens—singly, welded, or in galvanic combination—may be made in liquids, vapors or slurries. Test data are obtained at low cost, with a minimum of expert attention.

Compared with improvised testing methods in which significant corrosion factors may be overlooked, INCO Test Spools make corrosion tests more reliable by eliminating errors due to such factors as unsuitable test conditions and non-uniform exposure. Inaccuracies due to accidental galvanic contacts are prevented also.

The test can be conducted without interfering with production and for any length of time considered necessary. Upon completion, the rate of corrosion, and tendencies to pitting, concentration-cell corrosion or galvanic action can be determined for each metal tested.

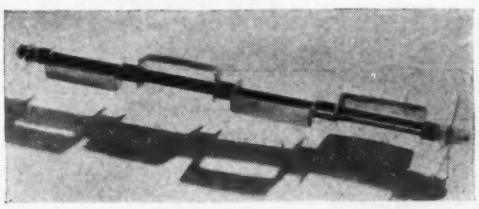

FIG. 2—*Modified spool type holder for corrosion testing inside pipes as small as 1¼" inside diameter. Strips are substituted for the standard discs. Does not seriously impede liquid flow.*

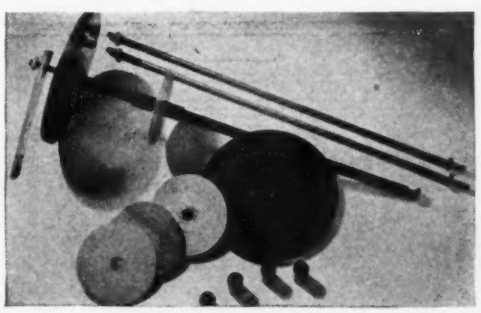

FIG. 3—*Group of specimens and insulators used in spool type holder for testing corrosion.*

• • •

How to arrange for an INCO Test Spool

Testing is often unnecessary, since INCO Corrosion Data Files contain data from more than 2,000 plant tests on more than 40,000 metal and alloy specimens. These files cover hundreds of other materials in addition to INCO's own products . . . Monel, Nickel and Inconel. To determine whether or not a test must be made, all factors of the problem should be assembled, preferably on an INCO Corrosion Data Work Sheet and sent to INCO Technical Service.

If a test is advisable, a test-spool is assembled with suitable specimens. It is then installed either by an INCO Technical Service representative or by your own engineers.

An A.S.T.M. paper "Corrosion Testing Methods," which gives more detailed information about this test method is available—write for Technical Bulletin T-10. Copies of the Corrosion Data Work Sheet will also be sent on request. The International Nickel Company, Inc., 67 Wall Street, New York 5, N. Y.

★ ★ ★ ★ ★ **INCO NICKEL ALLOYS** ★ ★ ★ ★ ★

MONEL • "K" MONEL • "S" MONEL • "R" MONEL • "KR" MONEL • INCONEL • "Z" NICKEL • NICKEL

Sheet...Strip...Rod...Tubing...Wire...Castings

•MORE WEAR
•LESS STRETCH
•BETTER FIT

with Laurel Rayon Oils

PROPER FINISHING is a rayon requisite in spite of the need for speed in wartime production. Laurel Rayon Oils actually save production time. Laboratory and mill tested, they offset rayon weaknesses by improving lubrication, effecting gain in resiliency with resultant longer wear and better fit.

Laurel Rayon Oils and Finishes are available for immediate delivery. Our Laboratory stands ready to cooperate with you on special purpose compounds. Send for trial order today.

Throw your scrap into the fight!

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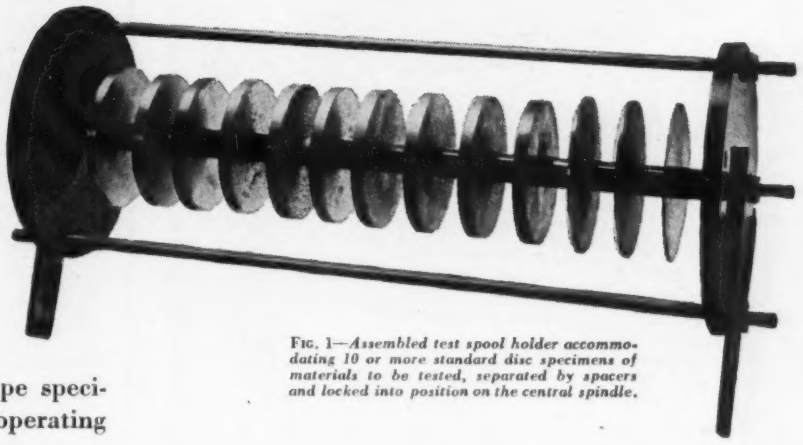

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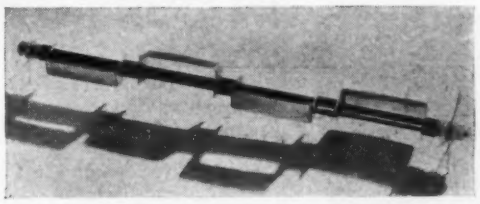

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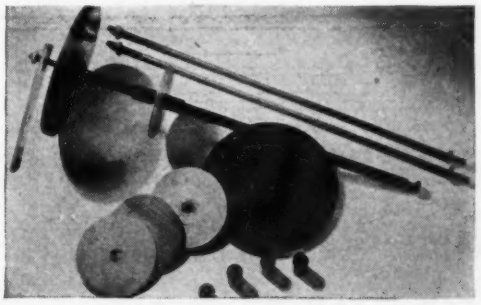

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• • •

How to arrange for an INCO Test Spool

Testing is often unnecessary, since INCO Corrosion Data Files contain data from more than 2,000 plant tests on more than 40,000 metal and alloy specimens. These files cover hundreds of other materials in addition to INCO's own products . . . Monel, Nickel and Inconel. To determine whether or not a test must be made, all factors of the problem should be assembled, preferably on an INCO Corrosion Data Work Sheet and sent to INCO Technical Service.

If a test is advisable, a test-spool is assembled with suitable specimens. It is then installed either by an INCO Technical Service representative or by your own engineers.

An A.S.T.M. paper "Corrosion Testing Methods," which gives more detailed information about this test method is available—write for Technical Bulletin T-10. Copies of the Corrosion Data Work Sheet will also be sent on request. The International Nickel Company, Inc., 67 Wall Street, New York 5, N. Y.

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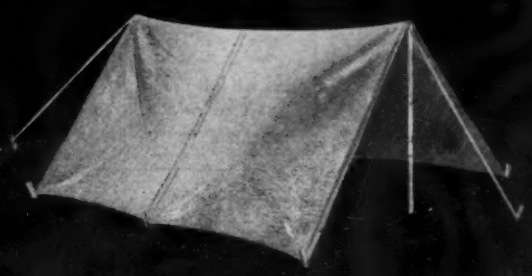
PROBLEM: To convert to war production of cotton duck



SOLUTION: Utilizing humidifying equipment from one mill for another

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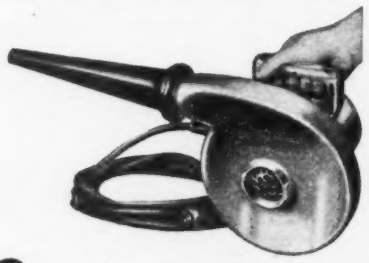

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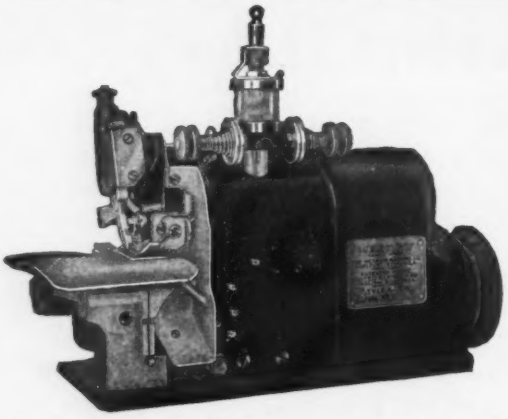

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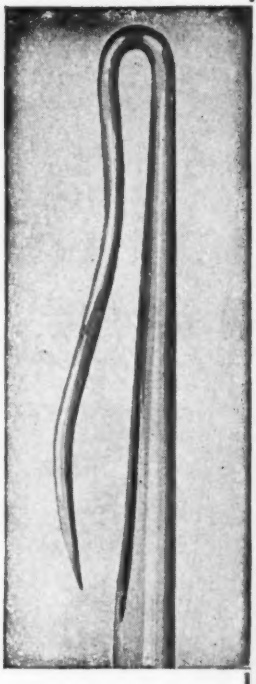

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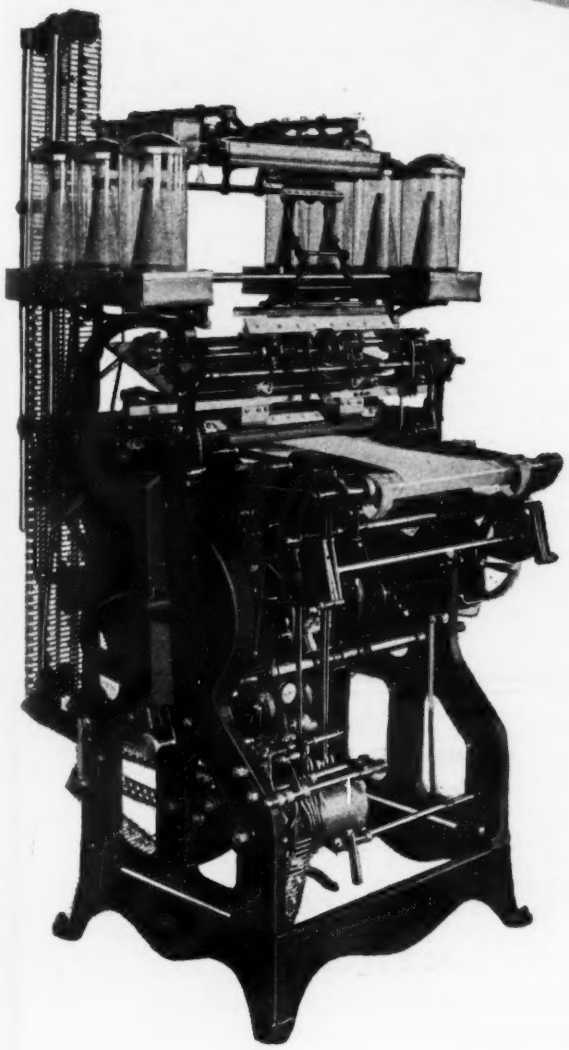

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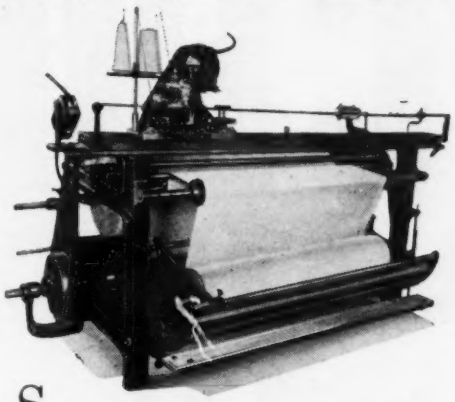

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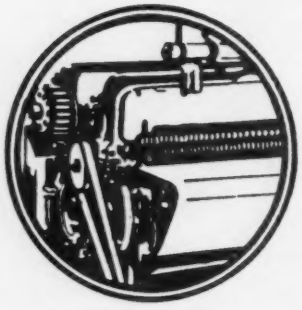

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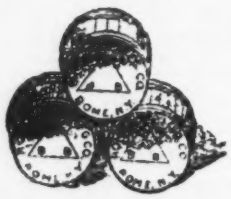

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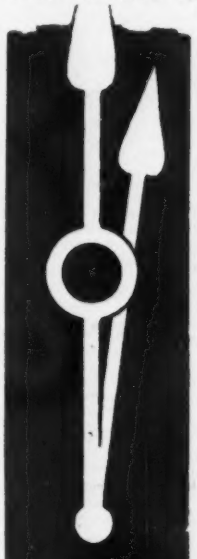

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For Scott and Williams hosiery knitting machines, steady employment.

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DYER for wool gloves and knit goods with practical experience in this line. Steady job on commercial work. Send all details with references to P-749, Textile World, 330 W. 42nd St., New York 18, N. Y.

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OVERSEER OR HEAD FIXER of Knitting room. 22 years experience, 6 years mechanical development in large textile mill. Thoroughly familiar with all equipment of hosiery, underwear, knitting, and sewing machines. PW-754, Textile World, 520 N. Michigan Ave., Chicago 11, Ill.

SUISSE TECHNICIAN, age 35 with 20 years of practical mill experience in silk and rayon, plain, fancy and jacquard. Suisse textile school graduate. Finish contract in Guatemala, desire to make a change. Will go anywhere South or North America. Write to Conrad Zobeli, Callejon Manchen No. 6, Guatemala City.

PRACTICAL PURCHASING AGENT. I have a friend who, I believe, would make some firm a good practical purchasing agent. He not only has had practical experience in all departments of a cotton mill, but now does the purchasing for a small plant as a part of his duties. About 40 years old. Draft class 3-AH. If interested, may I send him to you for personal interview. F. Gordon Cobb, Box 2671, Charlotte, N. C.

REPRESENTATIVE AVAILABLE

MANUFACTURERS—if you have any Washington problems, either Governmental or private business, or lack manpower to service Washington field, both Government and private business, and all services rendered by us are at reasonable cost and in strict accordance with established Government Regulations, specialists in renegotiation and qualified also for distributorships. Write RA-755, Textile World, 330 W. 42nd St., New York 18, N. Y.

WANTED

WANTED BY ONE WHO KNOWS the exact spot where each item is most urgently needed. Any type yarns, natural or dyed, cotton, rayon, acetate. Cash. W-641, Textile World, 330 W. 42nd St., New York 18, N. Y.

FOR SALE

PATENT NO. 2052482

Machine for Automatically Cleaning Flanges of Take Up Bobbins on Spinner Machine.

FRANK W. MONT

1720 North Market St., Berwick, Pa.

WANTED

(Continued on page 202)

WANTED

TWO FLAT CARDS

Saco Lowell or Saco Pettee preferred must be 40" with 27" doffers.

W-741, Textile World
520 N. Michigan Ave., Chicago 11, Ill.

WANTED

SET OF SQUEEZE ROLLERS RUBBER COVERED MINIMUM WIDTH 72 INCHES

ACCURATE CONDITIONING CORP.

10 West 20th St., New York, N. Y.
Telephone WAtkins 9-3400

WANTED TO BUY

4 x 4 or 4 x 1 silk looms, 56" to 72" wide. Intermediate Silk Head Type preferred. State age, price, and serial number.

W 735, Textile World
330 West 42nd St., New York 18, N. Y.

WANTED

Alsacienne or French Silk or Cotton Combs

Regardless of age or condition.

PAUL M. BROOMFIELD

15 Hathaway St. Boston 10, Mass.

WANTED

Two-Color roller printing machine—any width. Give make, size price and all other details.

VELVERAY CORPORATION

18 Pocasset St., Fall River, Mass.
or 45 White St., New York City

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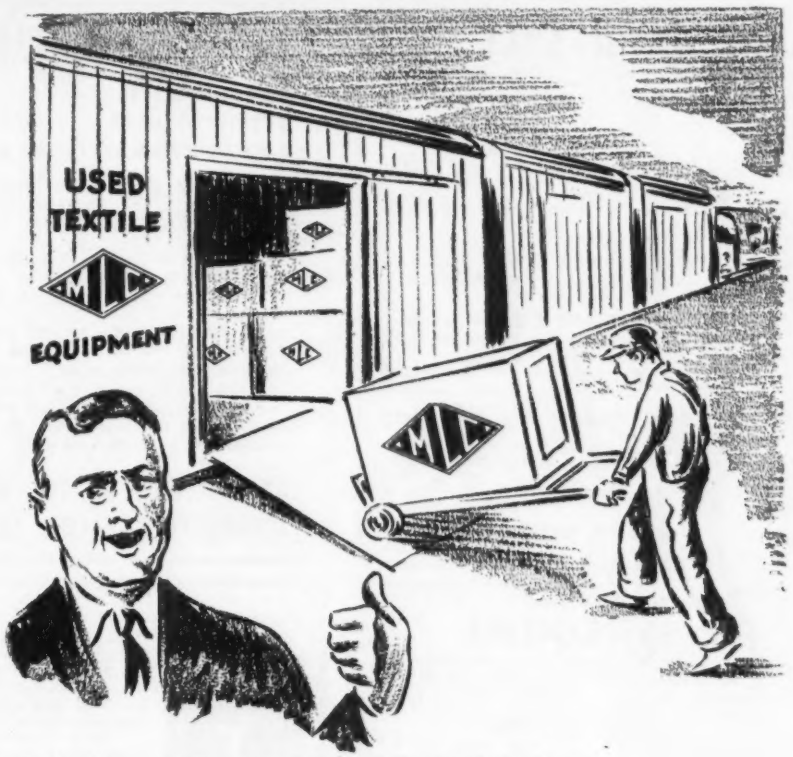
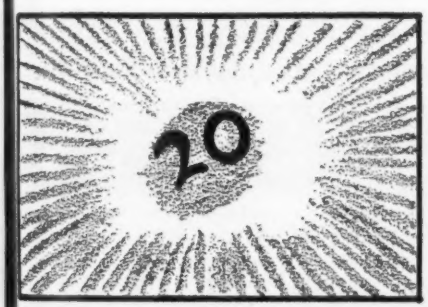
Suite 448, 815 Bowen Bldg., Washington 5, D. C.

"That picture *got me thinking*

It showed what I wanted!"





Naturally, I wanted reliability

in the Dealer I engaged. I had to plan carefully for future changing textile demands—pick my equipment with caution. I found out that "MLC" had been buying, selling, inspecting and appraising for 20 years, and had established a reputation for *knowing values* and handling quality machinery all through the Textile industry. But that wasn't all . . .

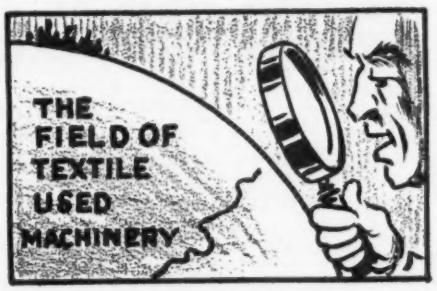
● A PARTIAL LIST

READY FOR SHIPMENT

2—Sets Whitin Model "C" Combers including:
2—Sliver Lappers 20 end derby back
2—Ribbon Lappers, 4 head
16—Combers, 8 head, 11¾" lap
18—Del. Whitin Drawing 12" Coilers
6—Doubling, Boarding & Winding Machines, 36" to 48"
1—44" King and Gerber Copper Basket Top Vertical Motor Driven Extractor
1—36" C & M Fearnaught Picker
40" D. & F. Picker
1—66" Voelker Dble Bed Cloth Press
1—66½" Parks & Woolson Single Shear
1—106" 2 Blade Schulze Double Shear
1—56 spindle Draper, Band driven 2½" Ring 3½" gauge Twister, arranged for motor drive—no motor

"A CASE OR A CARLOAD"

was the title, and being up against it to sell some unwanted war-work Textile Equipment and to replace it with machines for civilian products, I wanted to deal with a Dealer ready and able to take care of today's - *and tomorrow's* - needs; one who would give me the same service, no matter what the size of my order. So I called up "MLC" and turned my problems over to them.



"MLC" got me low prices

I saved money by buying through "MLC", instead of "broadcasting" my inquiries and so creating an accelerated "demand". And I saved time in SELLING, to get floor space for mill changes. Some of the items I wanted, "MLC" didn't have in stock, but quickly located and got them for me, just when I'd about given up hope.

And now my mill is humming—

I've licked the problem of machine renewal and replacement, or dispersal of worn out or "obsolete" equipment. I'm not only keeping up my WAR production but, I'm ready to change over to supply those long-pent-up civilian demands, too—with "MLC" constantly at my service to supply my needs.

MACHINERY LIQUIDATING COMPANY

OPA REGISTRATION NUMBER 789

EST. MLC 1923

31-33 West 42nd Street NEW YORK, N. Y.

DOMESTIC TELEPHONE PEnnsylvania 6-8014 EXPORT

DEALERS IN TEXTILE MACHINERY, ACCESSORIES AND MILL SUPPLIES

SEARCHLIGHT SECTION

FOR SALE

14M—7 x 3½ Saco-Lowell Card Room bobbins
7—Luther Thread Dressers, one, two and three brush
1—260 G.F. Universal Winder Motor Drive 96 S.P. Nu-Taper Cones
2—P. & W. Cloth Rolling and Measuring Machines
2—Aluminum Steam Jacketed Kettles 24 x 24
1—Economy All Steel Baling Press 72 x 36
1—Saco-Lowell Size Box, copper lined
1—P. & W. 3-blade Shear
1—C. & M. Railway Sewing Machines with Merrow head
1—E. & B. Cole Banding Machine

STANDARD MILL SUPPLY CO.
1070-1090 Main St. Pawtucket, R. I.
Tel: Perry 1037-38-39

SOUTHERN STANDARD MILL SUPPLY CO.
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FOR SALE—Hosiery Mill Machinery

We specialize in Scott & Williams, Reading, Banner, Wildman, Smith-Drum, Paramount and other types of hosiery mill equipment for seamless and full fashioned mills. Special attention to export trade.

MORRIS SPEIZMAN
508-14 W. Fifth St. Charlotte, N. C.

FOR SALE

30" LOOMS

76—Draper 30" Model E used looms in good condition. Complete with Lacoy top motions, pulleys, shafting, beams, etc. Located in South.

AMES BAG CO.
10 East 40th St. New York, N. Y.

AIR COMPRESSORS

17—355, 528, 730 & 1100 ft. Cap.

TANKS ON TOWERS

25,000, 50,000, 70,000 & 100,000 Gal. Cap. —Towers 25 to 156 ft. high.

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HOSIERY MACHINES

KNITTERS - RIBBERS - LOOPERS
CYLINDERS - DIALS - TRANSFERS
RIBBER CYLINDERS & DIALS
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TEXTILE MACHINERY

USED OR REBUILT
Spinning—Weaving—Dyeing
Finishing—Hosiery Knitting
Specialists in Export Trade

S. B. SCHWARTZ
LIQUIDATIONS
Plum & Lowerline Streets New Orleans, 18, La.
Cable: Maquintex—Code Bentley's

FOR SALE

BUTTERWORTH CALENDAR

7 ROLLS—80" FACE

3 Composition Rolls, 4 Steel Rolls, Hydraulic lift —water-cooled journals. Located in South.

AMES BAG CO.
10 EAST 40TH ST. NEW YORK CITY

FOR SALE

LATE TYPE
WILDMAN 28 CUT
SPRING NEEDLE MACHINES

5-11 inch	6-14 inch
6-12 inch	8-15 inch
6-13 inch	7-16 inch
	8-17 inch

FS-719, Textile World
330 W. 42nd St., New York 18, N. Y.

NORMAN M. McDOWELL

342 E. 142 St. ASSOCIATES Bronx, N. Y.
REBUILT & USED *BUY WITH CONFIDENCE* *MELROSE 5-1772-3*
EXCEPTIONAL VALUES - - - - PROMPT DELIVERY

1—BATCHER 2 roll 43½" goods.
1—CALENDER 47" Goods 5 Bowl.
1—CALENDER FRICTION 42" Goods 3 Roll.
1—DOUBLER 54" clock & motor.
1—DOUBLING & FOLDING 60" unit.
3—JOHNSON Dry Heads & Aluminum baskets.
4—EXTRACTORS 28" to 48" baskets.
3—FOLDERS 1¼ yd. & Ceiling type.
2—GRINDERS Nappers 80" & 86" rolls.
1—JIGG 60" Copper lined box.
1—LOOP DRYER 3½ Section 64' long.
2—NAPPERS Knit-Goods 20 roll units.
1—NAPPER S.A. 90" 14 roll.
3—NAPPERS D.A. 80" 20 rolls.
5—NAPPERS D.A. 80" 36 rolls.
1—PALMER Unit 60" Blanket with Cans.
1—QUETCH 3 roll 44" wide.
2—ROTARY STEAM PRESSES 66½"
4—SQUEEZE SETS 42" to 72" widths.
1—ROLLING & MEASURING Unit 72".
5—SHEARS 36" to 88" Single & Double Blades.
1—SEWING MACHINE 50" Railway type.
1—TENTER FRAME 30' x 60" width.
1—TUBER 60" goods.
1—3 cyl. WOOLEN CARD 48 x 60.
2—MULES 360 Spindles each 2⅛" Gauge.
2—WOOL SPINNING FRAMES 4" Gauge.

ONLY A FEW OF THE MANY UNITS AVAILABLE. SEND FOR OUR COMPLETE CATALOG. LIST YOUR SURPLUS EQUIPMENT WITH US.

FOR SALE

1—J. Hunter 66" Vacuum Extractor with #4 Nash Pump and 20/40 HP 220 volt motor and lead lined pipe.
1—Windle 40" Doubling & Rolling Machine
1—Woonsocket 90" DA Napper, 24 rolls.
1—C&M Silk type Folder 60"—1—1¼ yd. folds.
1—P&W Single Shear 66", new blade, list saving and folder.
Picker Lattice Aprons—spiked and plain—various widths and lengths.
6 ft.—5 ft.—4 ft.—Copper Slasher Cylinders.

BOBBINS • SPOOLS • SUPPLIES • BOX TRUCK
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TEXTILE MACHINERY OF ALL TYPES
APPRAISALS WOOLEN—WORSTED—COTTON LIQUIDATIONS
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TEXTILE MACHINERY AND APPLIANCES
NEW AND USED
River Works, Andover, Mass.

GAINES TEXTILE MACHINERY CO.

Dealers in Rebuilt and Guaranteed Yarn Winding and Spinning Machinery

141-45 West 17th Street New York, N. Y.

FOR SALE

A sturdy constructed Vollenweider Reed Dent Machine Gas soldering stove 8' length (complete) 1½" plank Reed work table 3' x 9'.

FS-744, Textile World
330 West 42nd St., New York 18, N. Y.

FOR SALE

Will sacrifice one new Fidelity ribber knitting machine 3½"—220 needles. If interested write to

FS-742, Textile World
330 West 42nd St., New York 18, N. Y.

AN EXCEPTIONAL BUY

A complete throwing plant for sale, fully equipped and ready to operate, in northern Pennsylvania. Terms arranged.

FS-743, Textile World
330 West 42nd St., New York 18, N. Y.

FOR SALE

100 M 8" Wool Filling Bobbins. 75 M 8¾" Automatic Filling Bobbins. Suitable for woolen or worsted weaving. Price and samples on request.

FS-697, Textile World
330 W. 42nd St., New York 18, N. Y.

"VICTORY IN 1944"

★ MAKE GENERAL EISENHOWER'S PREDICTION COME TRUE — KEEP UP PRODUCTION WITH

"CONSOLIDATED" EQUIPMENT

PRINTING MACHINES
8—R. B. & F. 3 to 10 color print Machines 40" to 64" wide, complete.

CALENDERS
2—V.V. ball bearing Calenders, 50" and 60".

AGERS
1—18' x 60" Ager.
1—30' Steel Ager.
1—Haveg Patch Ager.

KETTLES
20—Textile Copper Steam Jacketed Color Kettles, tilting type, agitated, 30 to 100 gallons capacity.

DRYERS
3—National Loop Dryers, 28', 33' & 65' lg.
1—Phila. Dry Mach. Co. Hurricane Continuous Skein Dryer.
1—P. & S. 72" Raw Stock Dryer, automatic Feed.
1—Phila. Raw Stock Dryer, 48" automatic Feeder.
1—P. & S. 36' Loop Dryer, 90" poles. Rebuilt by National. Equipped with high speed booster fans, airfins.
1—Sinclo Truck Dryer.

PRINT PADDER
1—3-Roll Print Padder, dry tower with unit heater.

FULLING MILLS
6—Rodney-Hunt Fulling Mills, gear drive.
2—Single Line Fulling Mills, rubber rolls.

CAN DRYERS
450—Dry Cans, 50" to 108" face, 23" to 84" dia.

SCOURING & DYEING MACHINES
2—Haveg Dye, or Washing Machines, completely enclosed, 51" wide.
1—Sargent 3-Bowl Skein Scouring Machine.
5—Klauder-Weldon Skein Dye Machines.
1—Obermaier 400# Package Dyeing Machine.
1—Sargent 4-Bowl Wool Scouring Washer, 48".

NAPPERS
8—D. & F. Woonsocket Nappers, 60" to 90".
2—Single Roll Nappers or Brushing Machines.

DYE JIGGS
6—Dye Jiggs, 54", rubber covered rolls.
1—Battery 4-Butterworth stainless steel lined Dye Jiggs, 45".
1—Battery 4-Morrison stainless steel lined Dye Jiggs, 30", tilting expanders.

DYE BECKS
25—Butterworth, Morrison & V. V. 6' & 8' Dye Becks, stainless steel and wood tubs.
10—Morrison & V. V. Dye Becks.

TENTER FRAMES
1—W & J. 95' x 50" Swing Tenter Frame.

FLAT FOLDERS
4—E & H. Flat Folders, 42" to 60".

OPEN WASHERS
1—Continuous Full Width Washer, consisting of 3 sections, 4 nips each section, 66".
1—60" Continuous Boil-Off Machine, steel tanks.

ROPE SOAPERS
1—V.V. Continuous Square Formation Washer.

SHEARS
3—P & W. Double Blade Shears, 60", with list saving device.
1—P & W. 3-Blade Shear, 60½" with list saving device.

BLEACHING
8—Bleaching 4-5 ton Kiers, vomit type.
1—5-ton Kier, circulating type.
2—Lincoln 2-roll Rope Squeeze rolls.

LOOMS
42—C & K 82" 4 x 1 automatic Looms.
25—C & K 4 x 1 100" Blanket Looms.
100—C & K 50" Rayon Looms.

BEAMER-BATCHERS
4—V.V. 50" & 55" Beamers.

EXTRACTORS
3—V.V. & Tolhurst 60" rubber & copper basket Extractors.
1—Tolhurst 48" Underslung open top Extractor, copper basket.
10—V.V. Fletcher & Tolhurst, 40", 44", 48" Extractors, copper lined.
12—Tolhurst, American Laundry, Adams Troy & Bach copper lined Extractor 17", 20", 26", 28" & 32".

WATER SOFTENERS
1—Permutit Water Softener, 103" hg. 63# wd.
2—10 x 10 Vertical Softeners, zeolite.
2—Pressure Sand Filters, 8' dia. x 20' lg. complete with pipe & Valves.

WORSTED SPINNING FRAMES
24—Ring Spinning Frames, 160 spindles 8½" pitch, 8" traverse, 1¾" ring, 4" front roll.

PADDERS, MANGLES, QUETCHES
4—Textile 50" 2-Roll Dye Padders.
5—Butterworth 50" 2-Roll Starch Mangles.
2—Textile 80" 2-Roll Mangles.
8—Butterworth & Morrison 2 & 3-Roll Quetches, 50", 60" & 72" wide.
5—Quetches, 2 & 3-Roll, 36-72".
1—James Hunter 50" Water Mangle.

PRESSES
1—Logemann All Steel Paper Baler.
2—Schick & Economy All Steel Presses.
1—Gessner 72" Wool Press.

DECATORS
2—David Gessner & P & W 72" & 48" wide, complete with Nash Pumps.

SINGEING MACHINES
1—80" 2-Burner Singeing Machine.

PRESSES
1—Logemann All Steel Paper Baler.
1—Schick All Steel Press.

BUTTON BREAKERS
3—Morrison & V.V. Button Breakers, 50", 60" 72" brass rolls.

STEAMING & FINISHING MACHINES
3—Steaming Machines for Tubular Goods.
2—C & M Finishing Machines for Tubular goods.

EXAMINING MACHINES
2—Examining Machines for tubular goods.

CONDITIONING MACHINES
2—Siastrom Cleaning and Conditioning Machines.

DOUBLERS
3—P & W. 46" & 66" doubling, reeling & Measuring machines.

PALMER QUETCHES
3—Morrison & V. V. 60" & 72" Palmer Quetch Units.
V. V. Palmer Quetch unit low type 65" wide.

MISCELLANEOUS
Skein Reeler, Universal Tubers, Gas Boiler, Scutchers, Expanders, Sewing Machines, Trucks, Generator Sets, Rubber Lined Tanks, Modine Heaters, Motors, Exhaust Fans, Pleaters, Mandrels Doctor Blades, Gears, Lathes, Portable Agitators, Accumulators, Wood Shells, Weidemann Control Unit, etc.

Supplying Textile Equipment for the DYEING FINISHING BLEACHING PRINTING WEAVING SPINNING OF RAYON COTTON WOOL WOOL FABRICS AND WORSTEDS

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Picking — Winding
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Dyeing and Finishing
Liquidations

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FOR SALE

Parkhurst 48 in. duplex BURR PICKER
2—Proctor & Schwartz RAW STOCK DRYERS
8—WHITIN 50 inch Card FEEDS
Bruce Power DIE CUTTING PRESS
15—TOMPKINS KNITTING TABLES

EXTRA-CYLINDERS
(Both Spring & Latch Needles)
KNITTING PARTS

BURR-WHEELS
(All makes and Gages)

2—DAVIS & FURBER 80 in. NAPPERS
PAYNE WINDERS & BOTTLE BOBBINS
2—McCreary DOUBLE ROLL BRUSHERS
Cameron type SLITTING MACHINES
Firsching type SLITTING MACHINES
KNITTING MACHINES—ALL KINDS

Geo. E. Smith Textile Machinery Co.
P. O. BOX 46 COHOES, N. Y.

1—Set of horizontal cans, 9 cans to a set, 81" face x 24" diameter of cans, solid journals, good condition and complete with stands and all equipment and is of steel construction.
2—Examining table complete with clock, motor and winder.

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Station T.—P. O. Box 33, Brooklyn (31), N. Y.

WANTED

WANTED

SACO LOWELL RING TWISTER

W-746, Textile World
330 West 42nd Street
New York 18, N. Y.

WANTED

Your Obsolete Sewing Threads

Send samples and quantities for quick disposal.

W-675, Textile World
330 W. 42nd St., New York 18, N. Y.

WANTED

Used Rice, Barton & Fales printing machine to print 43 inch goods 4 to 6 colors. Also used copper rollers 5½" diameter to fit machine.

W-736, Textile World
330 W. 42nd St., New York 18, N. Y.

TEXTILE AUXILIARIES

FOR PROMPT DELIVERY FROM OUR OWN STOCK:

1—Kemp Automatic Gas System with Rotary Pressure Blower, Expansion Tank and Countershaft.
2—Sets of Squeezers 16" Rubber covered top rolls and one Iron and one Brass Botton Roll.
1—60' Winsor & Jerauld Tenter Frame 50" W & J Side opening Clips
1—Haveg Washer 48" with Rubber and Brass Rolls—Tank 61" wide
7—Rope Soapers, Oval Reels, 2 Rubber Squeeze rolls, Friction Clutch
4—3 Roll Watermangles 48" Middle Brass Roll, Top & Bottom Husk
7—James Hunter Washers 10' 2 Maple Log rolls, Friction Clutch
1—Screen Printing & Drying Machine with Heating Coil, Blower and Ducts.

TEL. DEXTER 9650 **15-17 ORMSBEE AVE.**

PROVIDENCE, R. I.

FOR SALE

NEW — UNUSED

1 Reading Pressure Setting Machine for Nylon Cloth with 3 track turntable system complete with all valves, etc., and carriages with winding cores, etc.

WALDRICH COMPANY
Delawanna, **New Jersey**

WANTED

WANT TO BUY TANKS

3—50,000 to 100,000 Gal. Cap. Elevated Steel Water Tanks on Towers.
2—500 to 1000 Ft. Air Compressors.
3—500 to 1000 GPM Fire Pumps.

RUSSELL STANHOPE
60 EAST 42nd ST. NEW YORK, N. Y.

WANTED

SIPP MAGAZINE CREEL

340 or More Ends Required

W-720, Textile World
330 W. 42nd St., New York 18, N. Y.

Wanted
PLUSH MILLS
PLUSH LOOMS

We will purchase a complete plush mill . . . one which is now in operation or which has been operating recently. Present management will be retained. Will also consider the purchase of plush looms to be moved to our own mills. Write or wire

W-738, Textile World
330 West 42nd St., New York 18, New York

LIQUIDATING

EXCELLENT TEXTILE EQUIPMENT READY FOR IMMEDIATE SHIPMENT

SPECIAL

4—James Hunter Squeeze Rolls, 2 Top and 1 Bottom Rubber Covered Rolls, 50" Face, Hand Screw Lever Set, with Countershaft

5—James Hunter Squeeze Rolls, 16" Rubber Covered Top and Bottom Steel Roll, Hand Screw Lever Set, with Countershaft.

COMPLETE RAYON WEAVING PLANT

280—Draper Automatic Looms, Modern Slashing, Warping, Winding, Auxiliary Equipment.
40—Draper Automatic Motor Driven Looms, 60' Reed Space.

KNITTING

160—Scott & Williams Nye & Tredick Circular Ribbers, Range 10" 10 cut 8 feet to 23' 14 cut 12 feed.

SEWING

Union Special

25—52800
30—35300
11— 9900
3—15400

Union Buttons

10—Button Sewers
10—Button Sewers used as Tackers

Wilcox & Gibbs

5—Lock Stitch

Singers

112 W 140

Metropolitan

4—192-5 elastic machines with elastic pullers

WATER SOFTENING AND FILTRATION EQUIPMENT

2—Permutit Water Softeners, 10' Diameter x 16' Long, with Interconnecting Piping, Valves, Meters and large quantity of Zeolite.
2—Permutit Vertical Water Softeners, 3' Diameter, 6' High Complete with Zeolite and Fittings.
2—Permutit Type C, Electric Chemical Feeding Devices, Constant Feed.
1—Permutit Vertical Water Softener, 5' x 6' with Valves, Piping and Zeolite.
1—Hungerford & Terry Horizontal Steel Pressure Water Filters, 8' x 20', 8,000 Gallons Capacity, 3/8" Plate, equipped with Cross Piping 8" Valves and all accessories.
1—Filter Everson 42" x 48".
1—Filter Permutit 6'6" x 6'.
1—Permutit Single Vertical Water Softening Unit, Steel Tank, Size 10' x 10', Oval Slide Manhole Opening, with Trident 3" Water Meter, Safety Valve, and 4 Gate Valves 5".

COUNTERS

4—Veeder Root Pick Counters.

SPECIAL ENGRAVING EQUIPMENT

7—John Hope 50" Pantograph Machines, Double Bar.
10—John Hope 48" Pantograph Machines, Double Bar.
1—John Hope 45" Pantograph Machine, Double Bar

BELTING

1—Lot Wood and Fibre Variable Speed Drive Belts.

FINISHING

Beamer

1—Van Vlaanderen 50", Beaming and Rolling up Machine. Friction Drive.

Bleach House Equipment

2—8' x 9' Kiers.
2—10' Log Washers.
2—Bleach House Squeezers.

Boil Off

1—King & Gerber 54" Continuous Boil Off with Rubber Nip Rolls and Slat Conveyor.
1—Van Vlaanderen 3 Nip Continuous Open Soaper, 3 sets of Brass Nip Rollers, 60" face.

Calenders

1—Van Vlaanderen 3 Roll Finishing Calendar, Wool Felt Bowls, Large Diameter.
3—Textile 50" 5 Bowl Calenders.
2—Textile 45" 3 Bowl Friction Calenders.

Can Dryers

1—set of 20 Cans Textile Copper Cans 23" diameter, 54" face, Vertical Stack.
1—set of 18 Cans, 23" x 45" face, Vertical Stack.
1—7 Can Butterworth Copper Cans, 23" diameter, 80" face.
1—Textile Can Drying and Rolling Up Machine, Copper Can 36" diameter, 50" face.
1—set of Textile Dry Cans—15 Cans—23"x78"—Loriz.

CALENDER ROLLS

1—Paper Covered Silk Calender Roll, 50" Face, 16¼" Diameter, 59¾" Between Shoulders, Diameter of End Shaft 4 15/16", Length of End Shaft 6¾".
1—Steel Calender Roll, Newly Cotton Covered, 50" Face, 20" Diameter, 61" between Shoulders, Shaft 9" each End, Diameter 6 15/16".
6—Steel Schreiner Calendar Rolls, 42" and 46" Face.

SPECIAL

800—Butterworth Tentering Frame Top Opening Brass Face Clips, No. 99.
500—Butterworth Tenter Chain Clips, Type O-O Top Opening, Brass Faced Clips.

Decators

1—Parks & Woolson, 72" Semi-Decater with Blanket, Nash Vacuum Pump and Motor.

Doublers

2—Parks & Woolson 54" Doubling and Reeling Machines.
1—Van Vlaanderen 60" Doubling and Winding Machine

Dye Becks

1—Monel Metal Solid Tub Dye Beck, 5' with Monel Reels.
2—Stainless Steel Lined Sample Dye Becks.
1—Van Vlaanderen 4' Stainless Steel Lined Dye Beck.
1—Van Vlaanderen 19' Cypress Dye Beck.

Dye Jiggs

6—Textile Copper Lined Dye Jiggs 45" Face.

Dye Padder

1—Butterworth 2 Roll Dye Padder, Brass and Rubber Roll Motor Driven.

SPECIAL

5—Textile Dye Jiggs, 54" Wooden Tub, 2 Rubber Covered Ball Bearing Top Rolls, 4 Stainless Steel Immersion Rolls, Bevel Gear Drive.
1—De Lavel Worm Reduction Gear Unit, direct connected to Lincoln 10 H.P. A.C. Motor, 550 Volts, 60 Cycle, 3 Phase, 1200 R.P.M., with Control.
1—Battery of 4 Morrison Stainless Steel Dye Jiggs, 50", A.C. Motor Drive.

Embossers

1—Textile Two Roll Embossing Calenders, 12" face, One Roll Gas Heated, Pulley Driven, Complete with Table and Winder.

Extractors

1—American 48" Open Top Motor Driven Extractor, Copper Basket.
3—Hercules 60" Motor Driven Extractors, Copper Basket.

Folders

1—Eastwood Gray Goods Folder, 60" Wide.
3—E & H Flat Folders, 45" to 60" Wide.

GAS SYSTEM

1—Kemp Automatic Gas System, with Rotary Pressure Blower, By-Pass Valve, Back Fire Preventer, and Expansion Chamber

GEARS

1—Lot Bronze Machine Gears, Assorted Sizes (834 pounds).

METER

1—General Electric Flow Meter, Type F-12.

KETTLES

6—Copper Steam Jacketed Mixing Kettles, Equipped with Double Motion, Bronze Agitators, 70 to 350 Gallons Capacity.

Palmer

1—65" Van Vlaanderen Palmer Tenter Quetsch Unit, with Stainless Clips and Housing.

Printing

1—Werner 50" Single Color Print Machine.
1—Rice, Barton & Fales 7 Color 50" Print Machine.
2—Rice, Barton & Fales, 42" Print Machine, 8 and 11 color.

Tenter Frames

1—30' Windsor & Jerauld Open Tenter Frame with Steam Heating Coils.
1—60' Windsor & Terauld Tenter Frame with Proctor & Schwartz Housing.

SPECIAL

1—Butterworth 42" Hydraulic Schreiner 2 Bowl Calendar, equipped with Cotton and Steel Engraved Rolls, Gas Heated Friction Unrolling and Batcher, Tension Rolls, Complete with Accumulator and Pump, direct connected to General Electric 3 H.P. A.C. Motor, 550 Volts, 60 Cycle, 3 Phase, 900 R.P.M., Type M. T., with Drum Controller, Magnetic Switch and Grids.

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